V06443

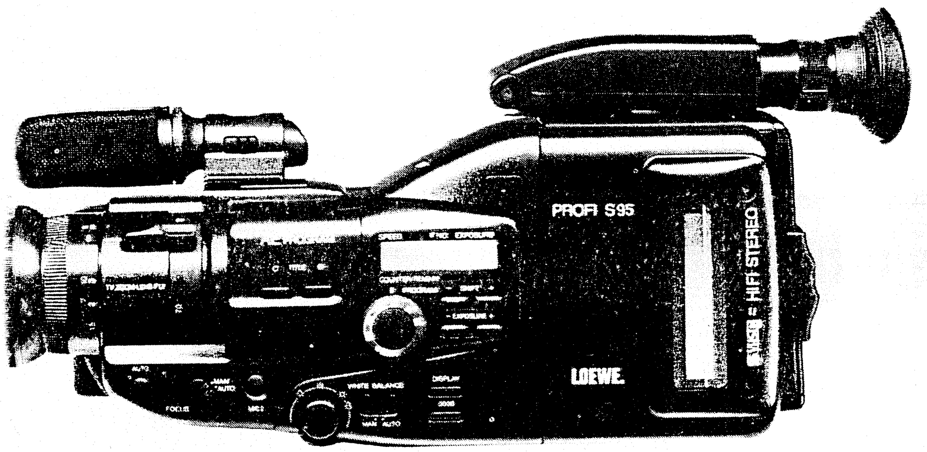
LOEWE.

Kundendienst-Serviceanleitung

(Service Manual)

TK-Archivexemplar

S VHS C
625



LOEWE-Camcorder Profi S 95 Art.-Nr. 69590

SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safely related characteristics, always use genuine LOEWE replacement parts.
   Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with ⚠ in the circuit diagram and printed wiring board.
2. Before returning a repaired unit to the customer, the service technican must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SICHERHEITSMASSNAHMEN

Bei Wartungsarbeiten sind die folgenden Sicherheitsmaßnahmen zu beachten:

1. Da verschiedene Teile dieses Gerätes Sicherheitsfunktionen aufweisen, nur Original-LOEWE-Ersatzteile verwenden.
   Kritische Teile im Netzteil sollten nicht durch ähnliche Teile anderer Hersteller ersetzt werden. Alle kritischen Teile sind im Schaltplan und im Diagramm der Schaltplatinen mit dem Symbol ⚠ gekennzeichnet.
2. Vor der Auslieferung eines reparierten Gerätes an den Kunden muß der Wartungstechniker das Gerät einer gründlichen Prüfung unterziehen, um sicherzustellen, daß sicherer Betrieb ohne die Gefahr von elektrischen Schlägen gewährleistet ist.

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This manual describes only the differences in DISASSEMBLY, MECHANICAL ADJUSTMENT, ELECTRICAL ADJUSTMENT (CAMERA, VTR) and EXPLODED VIEWS, from the Profi S90. Refer to Prosi S90 Service Manual for the items not included in this manual.

CONTENTS

CHAPTER 1

IDENTIFICATION AND OPERATION OF CONTROLS 1-1

CHAPTER 2 DISASSEMBLY

1. CASE REMOVAL 2-1

Note: Only the differences from the Profi S90 are described in "CASE REMOVAL" in this manual. Refer to the Profi S90 Service Manual when removing the components which are not referred to in this manual.

1-2. Electronic Viewfinder (EVF) .. 2-1
1-6. Right Case 2-1

2. CIRCUIT BOARD/TAPE TRANSPORT MECHANISM REMOVAL

Note: The method to disassemble the circuit board/tape transport mechanism is the same as that Profi S90. Refer to the Profi S90 Service Manual

MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (TOP VIEW)

MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (BOTTOM VIEW)

Note: The main mechanical components identifications is the same as that Profi S90. Refer to the Profi S90 Service Manual

3. MAIN MECHANICAL COMPONENTS REMOVAL

Note: The method to disassemble the main mechanical components is the same as that Profi S90. Refer to the Profi S90 Service Manual

4. LENS BLOCK REMOVAL

Note: The method to disassemble the lens block is the same as that Profi S90. Refer to the Profi S90 Service Manual

5. ELECTRONIC VIEWFINDER (EVF) REMOVAL

Note: The method to disassemble the electronic viewfinder (EVF)is the same as that Profi S90. Refer to the Profi S90 Service Manual

JIGS AND TAPES FOR ADJUSTMENT

Note: The jigs and tapes for adjustment is the same as that Profi S90. Refer to the Profi S90 Service Manual

CHAPTER 3 MECHANICAL ADJUSTMENT

Note: The method to adjustment the mechanical is the same as that Profi S90. Refer to the Profi S90 Service Manual

CHAPTER 4 ELECTRICAL ADJUSTMENT

Note: The method to adjustment the electrical is the same as that Profi S90. Refer to the Profi S90 Service Manual

CHAPTER 5 SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS

WHEN USING THIS SERVICE REFERENCE MATERIAL 5-1
LEADLESS COMPONENT IDENTIFICATION .. 5-2
CIRCUIT BOARD CONNECTION DIAGRAM ... 5-5

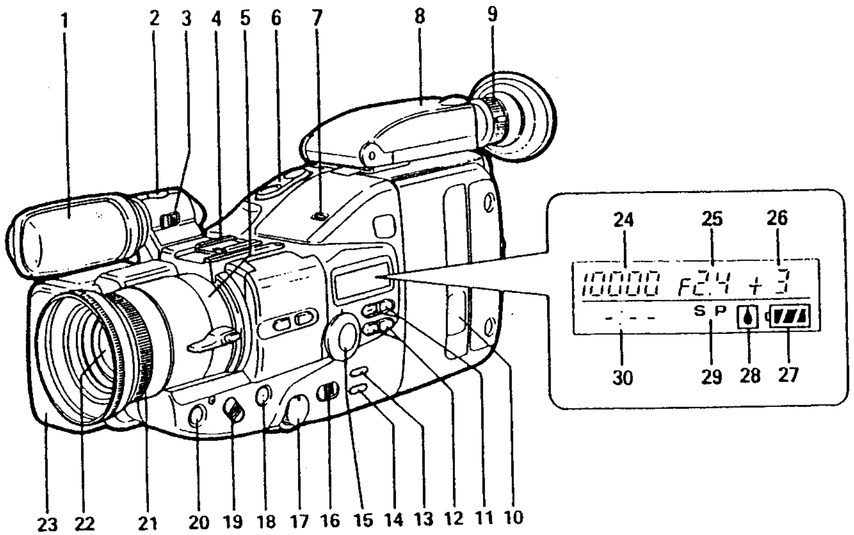
	SCHEMATIC DIAGRAM	CIRCUIT BOARD
SENSOR	5-7	/ 5-9,10
PROCESS (PROCESS)	5-11	/ 5-13
PROCESS (ENCODER)	5-15	/ 5-13
TITLER	5-17	/ 5-16
CONTROL	5-19	/ 5-19
ELECTRONIC VIEWFINDER (EVF)	5-19	/ 5-20
FOCUS SENSOR	5-21	/ 5-21
LED	5-22	/ 5-21
AUTOFOCUS	5-22	/ 5-22
MAIN (SYSTEM CONTROL)	5-23	/5-27,29
MAIN (SERVO)	5-23	/5-27,29
MAIN (REGULATOR)	5-27	/5-27,29
FUNCTION SWITCH	5-27	
MAIN (AUDIO)	5-31	/5-27,29
PREAMP	5-33	/ 5-33
LUMINANCE/CHROMA (LUMINANCE)	5-35	/5-39,41
LUMINANCE/CHROMA (CHROMA)	5-37	/5-39,41
MOTOR DRIVE (MOTOR DRIVE)	5-43	/ 5-44
MOTOR DRIVE (TROUBLE DET.)	5-45	/ 5-44
CAPSTAN MOTOR	5-45	
DC-DC CONVERTER	5-46	
SWITCHING REGULATOR	5-46	/ 5-46
FM AUDIO	5-47	/ 5-48
MIC	5-48	

WAVEFORMS
SENSOR 5-9
PROCESS 5-12
ELECTRONIC VIEWFINDER (EVF) 5-24
MAIN (SERVO) 5-32
PREAMP 5-42
LUMINANCE/CHROMA 5-44

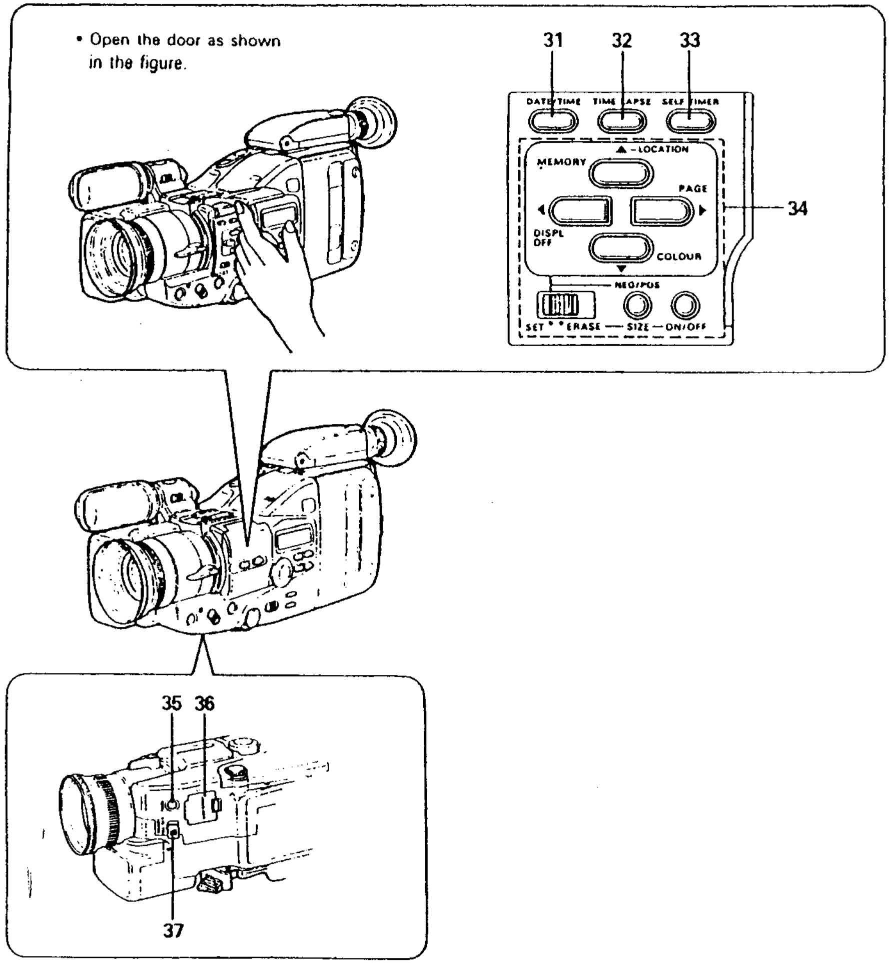
CHAPTER 6 EXPLODED VIEW

Note: Only the differences from the Profi S90 are described in "exploded view" in this manual. Refer to the Profi S90 Service Manual when removing the components which are not referred to in this manual.

CABINET SECTION 6-1



1. **Stereo Microphone**
   Sensitive to sounds coming from the direction in which the camera is pointed.
2. **60 Hz Detection Sensor**
   When a subject is shot under fluorescent lighting in areas where the power frequency is 60 Hz (in U.S.A., Canada, etc.) flickering occurs in the picture.
   When this sensor detects 60 Hz, it changes the shutter speed automatically so that no flickering occurs.
   NOTE: When a subject is shot under fluorescent lighting in areas where the power frequency is 50 Hz, the shutter speed is set to 1/50 automatically.
3. **MIC NORMAL/WIND Switch**
   This switch is used to reduce noise that occurs due to wind. Place the switch in the "NORMAL" position for normal use.
4. **Accessory Shoe**
   Used to attach a light weight video accessory to your camera/recorder.
   NOTE: Do not use this shoe to mount a camera light on the camera/recorder. Excessive heat from a light could damage the camera/recorder's case.
5. **Zoom Ring (Manual Zooming)**
   The picture size can be magnified 8 times with the use of the zoom feature. Just rotate the zoom ring for a close up (T) or wide angle (W) picture. Macro close-up, as close as 1 cm from object, is feasible.
6. **Power Zoom Switch**
   This switch performs zooming electrically.
   "W": Picture becomes wider gradually.
   "T": Picture becomes telescopic gradually.
7. **Record Indicator**
   Flashes for about 10 seconds when the SELF TIMER switch is pressed during record/pause (stand-by) mode and stays on to indicate recording starts. This also lights during normal recording.
8. **Electronic Viewfinder (EVF)**
   Displays what the camera/recorder lens sees. The electronic viewfinder also functions as a convenient black-and-white monitor during playback of recorded material.
9. **Diopter Control**
   To use the electronic viewfinder without eyeglasses on, turn this control knob for your optimum focus adjustment.
10. **Cassette Holder**
    Slide EJECT switch to open the cassette holder. Be aware of the cassette direction when inserting.
    NOTE: Power source must be connected to open the cassette holder.
11. **SHIFT Buttons (▲,▼)**
    When the MODE selector is set to "S", "D" or "M", use these buttons to set the shutter speed and F number.
12. **EXPOSURE Buttons (+,−)**
    Use these buttons to correct the exposure. When the MODE selector is set to "M", press these buttons to set the shutter speed.
13. **TAPE REMAIN/COUNTER Select Button**
    Use this button to switch the indications in the viewfinder and LCD panel.
    Pressing this button once will display the tape remaining of the cassette. Pressing twice will display the tape counter. Pressing a third time will cause counter memory mark "M" to appear. Press a fourth time to delete all displays from the viewfinder leaving the tape remaining display on the LCD panel as it is. Refer to page 30.
14. **RESET Button**
    When the tape counter is displayed in the viewfinder, pressing this button resets the counter to "0000"
15. **Shooting MODE Selector**
    Use this selector to select on of a number shooting modes. Set it to "AUTO" for usual shooting; the camera automatically controls the functions including the iris and focus, etc. See page 21 for details.
16. **WHITE BAL Switch**
    When this switch is in the "AUTO" position, the colour balance is set automatically. Place the switch in "MAN" position to adjust the colour balance to suit your personal preference.
17. **Manual White Balance Control**
    Use this control to adjust the colour balance manually. Set the WHITE BAL switch to "MAN", and while viewing colour monitor, adjust this control for a nature picture.
18. **NARRATION Button**
    Press and hold the button while shooting; you can also record a narrative via the built-in narration microphone while the button is depressed.
19. **AUTO/MAN FOCUS Switch**
    Set this switch to the "AUTO" position for automatic focusing, and to the "MAN" position for focusing with the focus ring.
20. **PUSH AUTO Focus Button**
    Auto focusing can be also performed during manual focus mode by pushing this button.
21. **Focus Ring**
    Do not attempt to manually turn the focus ring when the camera/recorder is in the auto focus mode.
22. **Lens**
    F1.2 (8.7 – 70 mm) 8:1 power zoom lens features with auto focus and auto iris functions.
23. **Auto Focus Window**
    To automatically focus the camera lens, this window transmits and receives infrared light which is reflected off the subject. Make sure you don't obstruct this window when recording.
24. **SHUTTER SPEED Indicator**
    Indicates the selected shutter speed.
25. **F No. Indicator**
    Indicates the selected F number.
26. **Exposure Correction Value Indicator**
27. **Battery Level Indicator**
    Indicates the battery condition.
    When the battery is fully charged, the display shows " ▮▮▮ ". When the battery is very nearly empty, the display shows " ▮ ". When " ▮ " starts blinking, you should find an alternative power source or recharge the battery.
28. **Dew Indicator**
    Indicates dew condensation on the camera/recorder mechanism. While this indicator appears, the unit will not operate. If this occurs, eject the tape and leave the power on. When the indicator goes off, the unit can be operated.
29. **Tape Speed Indicator (SP/LP)**
    Shows the recording speed during recording and playback.
30. **TAPE REMAIN/COUNTER Indicator**
    Shows the tape remaining or tape counter.



- Open the door as shown in the figure.

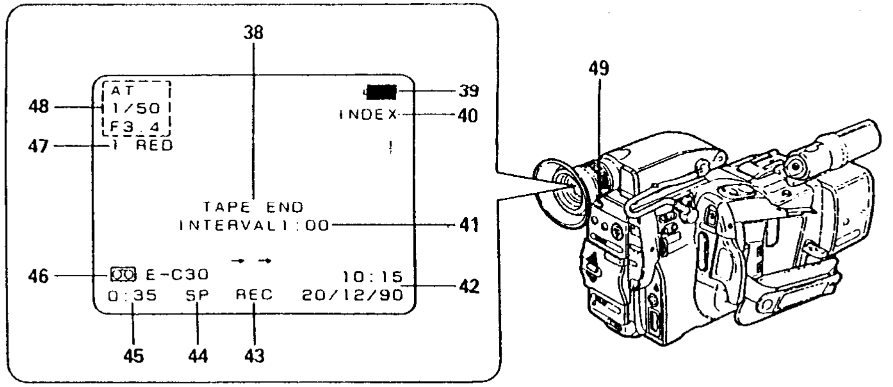
31. **DATE/TIME Button**
Press this button to display the date and clock in the viewfinder. Whenever the date and clock appear in the viewfinder, they will be recorded on the tape.

32. **TIME LAPSE Button**
This button allows time lapse and one shot recording.

33. **SELF TIMER Button**
This button allows you to start recording after about 10 seconds when the button is pressed.

34. **Titler Buttons**
Use these buttons to store a title in memory or recall the stored title and record it superimposed on the picture being shot. See page 31 for details.

35. **FADE Button**
During recording you can add a professional touch to your recordings by fading in and out of scenes.
NOTE: When you use FADE button to fade in and out, the sound will also fade in and out with the picture.



36. **Clock Battery Compartment**
Pull the tab to open the cover and install the clock battery (provided).

37. **IMAGE Switch**
Normally set it to "POS".
Set to "NEG" for special effects as in a negative film.

38. **TAPE Indicator**
When the record start/stop button is pressed, if a cassette without its safety tab is inserted or there is no cassete, "TAPE" appears for several seconds. When the tape reaches near the end during shooting, "TAPE END" flashes.

39. **Battery Level Indicator**
Indicates the battery condition.
When the battery is fully charged, the display shows " ▮▮▮ ". When the battery is very nearly empty, the display shows " ▯ ". When " ▯ " starts blinking, you should find an alternative power source or recharge the battery.

40. **INDEX Indicator**
See page 29 for details.

41. **INTERVAL Indicator**
Appears in the time lapse and one-shot recording modes.

42. **DATE/TIME Indicator**
Indicate the date/clock during the record or record/pause (stand-by) mode. You can record the clock and/or date with object when recording.

43. **MODE Indicator**
Indicates the operating modes;
- "REC" appears during the record mode.
- "REWIND" appears during the rewind mode.
- "FASTFWD" appears during the fast forward mode.

44. **Tape Speed Indicator (SP/LP)**
Shows the recording speed during recording and playback.

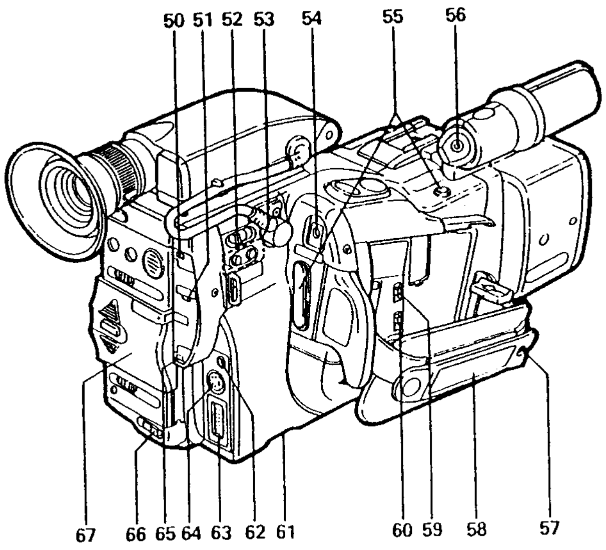
45. **TAPE REMAIN/COUNTER Indicator**
Shows the tape remaining or tape counter.

46. **TAPE Indicator**
- ▣ : Shows that a cassette is inserted.
- E-C30: Shows the type of cassette tape.

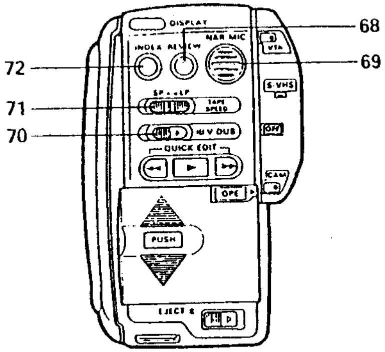
47. **Title Indicator**
Indicates the page and colour of the title.

48. **Shooting MODE Indicator**
Indicates the shooting mode, shutter speed and F number.

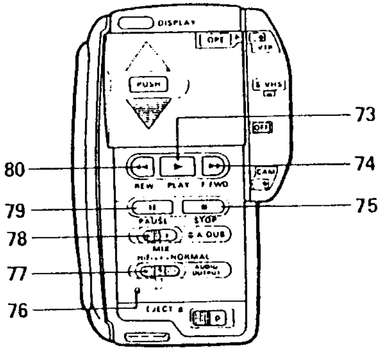
49. **DISPLAY Button**
Use this button to switch the display in the vewefinder on and off. Pressing the button once will cause the display to appear in the viewfinder and pressing it once more to fix the display. Press the button a third time to delete the display from the viewfinder.
NOTE: Use the DATE/TIME button on the side panel to switch the date/time display on and off.



- When Camera power is turned on
(the mode shifter is slid down)



- When VTR power is turned on.
(the mode shifter is slid up)



50. **VTR Indicator**
Lights when the VTR power is turned on.

51. **S-VHS Indicator**
This indicator lights up when the camera/recorder is recording or playing back in the S-VHS mode. It does not light up when the camera/recorder is recording or playing back in the VHS mode.
NOTE: An S-VHS-C cassette must be used to record in the S-VHS format.

52. **MIC MIX (ON/OFF) Switch**
This switch lets you add additional comments (or music) to a tape while you are copying a tape from your camera/recorder onto another VTR.

53. **DATE/TIME Set Buttons**
These buttons are used to set the clock (time and date) in your camera/recorder so it can be recorded on your tapes for future reference.

54. **DC IN 9.6V Jack**
When using the AC adapter/charger, connect one end of the DC cord (provided) to this jack and the other end to "DC OUTPUT" of the AC adapter/charger. When using the car cord (optional), connect this jack and the car's cigarette lighter socket.

55. **Record Start/Stop Buttons**
These two buttons function in the entirely same way. Press either button in the camera mode to start recording. Press it again to set the camera/recorder to the record/pause (standby) mode.

56. **EXT. STEREO MIC Jack**
Connect an external microphone (Not supplied) here to record sound from the external microphone.
NOTE: Connecting an external microphone automatically switches off the built-in microphone.

57. **Lens Cap Tab**
Place the lens cap on this tab when you are ready to record a scene. The tab also prevents the lens cap from swinging around on its cord.

58. **Hand Strap**
Adjust to best fit to your hand.

59. **S-VHS Switch**
Use to select S-VHS or normal VHS for recording. It has no effect during playback. Normally set it to "AUTO". S-VHS indicator lights when the camera/recorder is recording or playing back in S-VHS mode.

60. **EDIT Switch**
When copying a tape onto another VTR, set this switch to "ON".
The copied tape will provide clearer picture.

61. **TRACKING Control**
Used when playing a tape recorded on another VTR. Adjust for best picture. At all other times leave it in the center position, which can be found as a small detent in the movement of the knob.

62. **HEADPHONE Jack**
Sound being recorded via the microphone or played back may be monitored by stereo ear receiver (provided) connected to this jack.

63. **AV OUT Jack**
Connect the audio/video output cable to this jack and to the audio and video inputs of your TV/monitor receiver. You may also connect the RF converter unit to this jack and your TV receiver.

64. **S VIDEO Out Jack**
Use this connector jack when you want to send the video signal out to the TV or the VTR having an S VIDEO IN jack.
NOTE: This connector allows you to take full advantage of the new S-VHS recording format.

65. **CAM Indicator**
Will light when the camera power is turned on.

66. **EJECT Switch**
Slide to insert or remove the cassette.

67. **Mode Shifter**
Uses this mode shifter to switch the camera power and VTR power on and off.

68. **REVIEW Button**
Used to review the last few seconds of the recorded segment in the record/pause mode.

69. **NARRATION MIC.**
You can record a narrative via this microphone together with the picture and sound. The operator's voice can be recorded via this microphone while the NARRATION button is held depressed.

70. **VIDEO DUB Switch**
This switch is used to record new video in place of existing video without erasing the audio.

71. **TAPE SPEED Switch (LP/SP)**
This switch selects the recording speed. "SP" provides the best picture quality but the shortest recording time (30 minutes with E-C30 tape).
"LP" provides slightly reduced picture quality, but longer recording time (1 hour with E-C30 tape).
NOTE: Tape speed switch has no effect during playback. When playing tapes, the tape speed is selected automatically.

72. **INDEX Button**
When this button is pressed during a recording, the camera/recorder records an invisible index mark on the tape.
This is useful later when the tape is played back in a VTR that features the indexing system called "VHS Index Search System" because you will be able to quickly locate each index mark.

73. **PLAY Button**
Used for playback of tape.
NOTE: When the camera/recorder is record/pause (stand-by) mode, pressing and holding this button will play the tape at normal.

74. **F.FWD Button**
Press this button during stop or rewind mode, and fast-forwarding starts. "FAST FWD" indication appears in the viewfinder whenever the tape counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the forward direction approximately 3 times faster than the normal speed (SP recorded tape) or 7 times faster than the normal speed (LP recorded tape) to confirm the recorded content. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
NOTE: You can also visually scan forward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.

75. **STOP Button**
The STOP button is used to stop playback, rewind, and fast forward operations. The STOP button has no effect during record operation.

76. **Hi-Fi Indicator**
Lights if the AUDIO OUTPUT select switch is set to "Hi-Fi" or "MIX" when a Hi-Fi recorded tape is played.

77. **AUDIO OUTPUT Select Switch**
Change over this switch to select the sound to be played back.
    - Hi-Fi: Plays the stereo sound recorded on the Hi-Fi tracks.
    - MIX: Plays the sound recorded on both the Hi-Fi and linear tracks.
    - NORMAL: Plays the sound recorded on the linear tracks.

78. **AUDIO DUB Switch**
This switch is used to record new audio in place of existing audio without erasing the video.

79. **PAUSE Button**
This button is used to display a still picture during playback mode.

80. **REW Button**
Press this button during stop or fast forward mode, and fast-rewinding starts. "REWIND" indication appears in the viewfinder whenever the tape counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the rewind direction approximately 3 times faster than the normal speed (SP recorded tape) or 7 times faster than the normal speed (LP recorded tape) to confirm the recorded contents. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
NOTE: You can also visually scan backward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.

CHAPTER 2 DISASSEMBLY

1. CASE REMOVAL

1-2. Electronic Viewfinder (EVF)

1. Disconnect connector CN806.
   (See Fig. 2-2).
2. Remove one (1) screw holding the EVF.

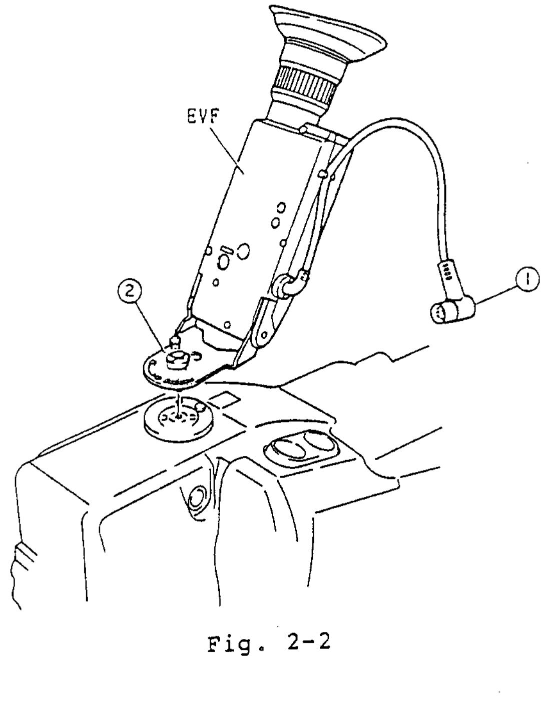


Fig. 2-2

1-6. Right Case

1. Remove the grip cover. (See Fig. 2-1)
2. Remove the EVF. (See Fig. 2-2)
3. Remove the accessory shoe.
   (See Figs. 2-3, 2-4)
4. Remove the microphone.
   (See Figs. 2-6, 2-7)
5. Remove five (5) screws holding the right case. (See Fig. 2-8)
6. Remove four (4) screws holding the right case. (See Fig. 2-9)
7. Disconnect two (2) connectors (PG1, PG2) and remove the right case in the direction of the arrow.
   (See Figs. 2-8, 2-9)

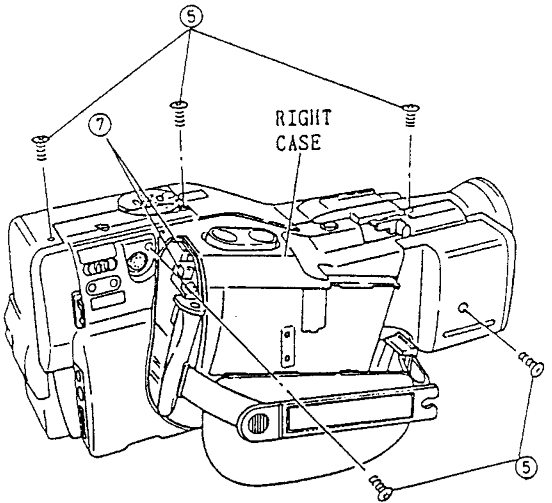


Fig. 2-8

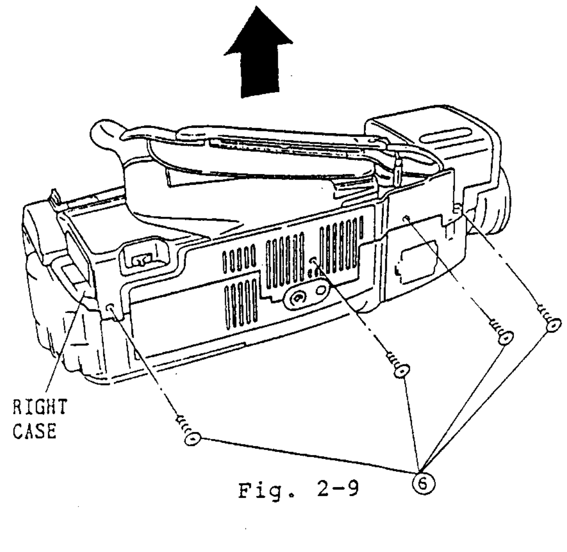


Fig. 2-9

CHAPTER 5 SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS

WHEN USING THIS SERVICE REFERENCE MATERIAL

1. Markings in Schematic and Circuit Board Diagrams

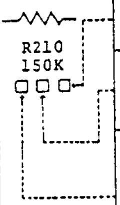
(1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.

(2) Parts with marks ② in the circuit board diagrams are leadless jumpers.

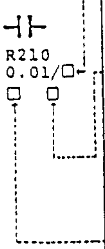
2. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables for reading abbreviations to replace parts correctly.

2-1. Resistors

	Value	No indication .... ohm K .... kohm
	Tolerance	No indication .... ±5% K .... ±10% M .... ±20%
	Power capacitance	No indication .... 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted)
	Type	No indication .. Carbon film fixed RC .... Carbon solid RW .... Power-type wire-wound solid RS .... Metal oxide film solid RN .... Metal film solid
Example R210 150K .... 150 kohm, carbon solid RC.1/2.K 1/2W, ±10%		

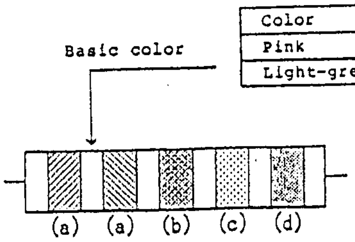
2-2. Capacitors

	Value	No indication .... μF P .... PF
	Dielectric resistance	No indication .... 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
	Tolerances	No indication .... ±10% J .... ±5% M .... ±20% C .... ±0.25PF Z .... +80%/-20% (No indication with electrolytic capacitors (excluding tantalum and high stability electrolytic capacitors)
	Type	No indication .. Ceramic, general electrolytic (see circuit symbol to distinct from ceramic) MYL .... Mylar (Polyester film) STY .... Styrol TA .... Tantalum KU .... High stability electrolytic MP .... Metalized paper
Example C210 0.01/25 .... Mylar, 0.01μF, 25WV MYL.J ±5%		

3. How to Read Capacitance of Resistance-Type Capacitors and Coils

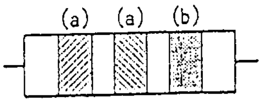
3-1 Capacitors

Color	Related voltage
Pink	25V
Light-green	50V



Color	Capacitance (a)	Multiplier (b)	Tolerance (c)	Characteristics (d)
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6	10^6		
Purple	7			
Gray	8		±30%	High permittivity type
White	9			For temperature compensation
Gold			±5%	
Silver			±10%	

3-2 Coils



4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.

(2) High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.

(3) The human body and clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so workers should be grounded.

(4) Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

5. Measure the voltages at each section with the negative side of power supply as a reference.

The voltages in the camera section are measured with the VTR in the record mode, and those in the VTR section are measured in the record and playback modes.

- * Voltages in ( ) are in the record mode.
- * One voltage value is common for recording and playback.

LEADLESS COMPONENT IDENTIFICATION

1. Leadless Transistors

The leadless transistor number is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three letters.

Letter	Transistor Number	Letter	Transistor Number
A	2SB709	H	2SA1036K
A(R)	2SB1218R(AR)	I	2SB792
A(S)	2SB766S(AS)	J	2SC2735
A(J)	2SB1000J(AJ)	K	2SA1036
B	2SC1621	K(P)	2SC2413P(KP)
B(J)	2SB1001J(BJ)	L	2SC2462
B(R)	2SC4081R(BR)	M	2SA1052
B(R)	2SC2412AR(BR)	N	2SC1653
B(S)	2SC2412KS(BS)	N(E)	2SD1306E(NE)
C	2SA1122	P	2SD814
C(L)	2SD999L(CL)	P(E)	2SA1171E(PE)
C(R)	2SB710R(CR)	Q	2SC2620
C(R)	2SC4097R(CR)	Q(O)	2SC2714O(QO)
C(R)	2SC2411R(CR)	R	2SC2618
C(Q)	2SC2411KQ(CQ)	S	2SA1121
D	2SC2463	S(Q)	2SC3082KQ(SQ)
D(L)	2SB798L(DL)	U	2SC2404
E	2SA1022	W	2SD602
F	2SC2619	Y	2SD601
F(S)	2SA1037KS(FS)	Y(R)	2SD1819R(YR)
F(R)	2SA1576R(FR)	Z	2SD874
-	- - - -	-	- - - -
AA(S)	2SD1757KS(AAS)	DB(R)	2SD1766R(DBR)
BC(R)	2SB1188R(BCR)	IR(D)	2SA1484D(IRD)
BF(R)	2SB1308R(BFR)		
-	- - - -	-	- - - -
1D(T)	2SD1328T(1DT)	1C(R)	2SB902R(1CR)
-	- - - -	-	- - - -
B(3)	2SC1621(3)(B3)	L(6)	MMBC1623(6)(L6)
C(7)	2SA811(7)(C7)	L(6)	2SC1623(6)(L6)
L(7)	2SC2812(7)(L7)	F(2)	2SC1009(2)(F2)
M(6)	2SA812(6)(M6)	M(6)	2SA1179(6)(M6)
N(4)	2SC1653(4)(N4)		
-	- - - -	-	- - - -
D(16)	2SC1622A(16)(D16)	R(25)	2SC3356(25)(R25)
R(35)	2SC3583(35)(R35)	R(45)	2SC3585(45)(R45)
Y(25)	NTM3906(25)(Y25)		
-	- - - -	-	- - - -
1(D)	2SC3127D(1D)		
-	- - - -	-	- - - -
S1	FMS1	S2	FMS2
T1	IMT1	W1	FMW1
W2	FMW2	W3	FMW3
X1	IMX1	Y1	FMY1
Y3	FMY3	Z1	IMZ1
Z2	IMZ2		
-	- - - -	-	- - - -
4R	XN1C301	5H	XN4501
5K	XN4401		
Digital Transistor	------------	------------	------------
04	DTC114TK	06	DTC144TK
13	DTA143EK	15	DTA124K
15(s)	DTA124EU	16	DTA144EK
16(s)	DTA144EU	23	DTC143EK
24	DTC114EK	24(s)	DTC114EU
25	DTC124K	25(s)	DTC124EU
26	DTC144K	26(s)	DTC144EU
33	DTA143XK	43	DTC143XK
52	DTA123YK	64	DTC114YK
-	- - - -	-	- - - -
6B	UN5112	8B	UN5212
-	- - - -	-	- - - -
$\underline{\text{F52}}$	DTB123	$\underline{\text{G21}}$	DTD113ZK
$\underline{\text{H03}}$	DTC343TK	$\underline{\text{H27}}$	DTC363EK
R31	FP1L2Q		
-	- - - -	-	- - - -
A1	FMA1	A2	FMA2
B2	IMB2	C2	FMC2
D2	IMD2	G1	FMG1
G2	FMG2	G5	FMG5
H2	IMH2		

Letter	Transistor Number	Letter	Transistor Number
FET	------------	------------	------------
G	2SK302	J	2SK208
K	2SK160	W	2SK322
X	2SK157	X(4)	2SK94(4)(X4)
X(17)	2SK425(17)(X17)		
Y	2SK197	Z	2SK217
-	- - - -	-	- - - -
XA	2SK980		
-	- - - -	-	- - - -
3	2SK620	3(O)	2SK621(O)(3O)
-	- - - -	-	- - - -
1M	2SA1052	1F	2SK321
1K	2SK316	2B	2SK374

* "(s)" in the above table shows a component with smaller size.

* Codes on the digital transistors show only the transistor numbers.

(1) Identification for two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
CD	2SA1122D
LD	2SC2462D

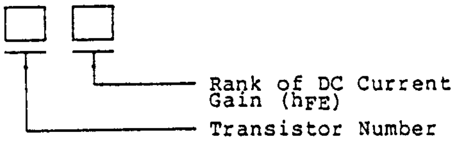


Fig.5-1 Leadless Transistor Code

(2) Identification for two types of one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Transistor Number
L	2SC1623

Example:

Code	Number
L5	2SC1623(5)
L6	2SC1623(6)

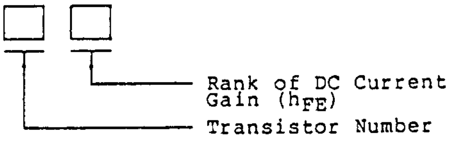
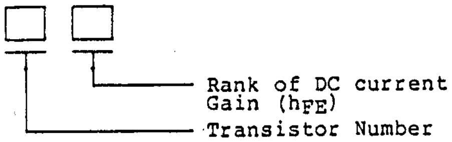


Fig.5-2 Leadless Transistor Code

Example:

Code	Number
1D	2SC3127D



Note: Codes S1, S2, T1, W1, W2, W3, X1, Y1, Y3, Z1 and Z2 show only the transistor numbers.

Fig.5-3 Leadless Transistor Code

(3) Identification for one numeral and two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
1FQ	2SK321Q

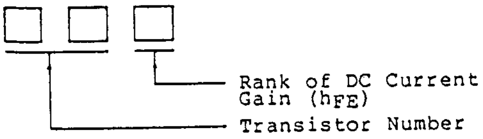


Fig.5-4 Leadless Transistor Code

(4) Identification for one letter and two numerals.
Use this coce and the following chart for component identification.

Example:

Code	Number
R25	25C3356

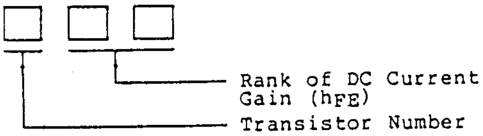


Fig. 5-5 Leadless Transistor Code

(5) Identification for two letters and one numeral.
Use this code and the following chart for component identification.

Example:

Code	Number
DV5	2SD596

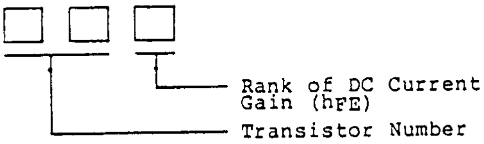


Fig. 5-6 Leadless Transistor Code

(6) Identification for three letters.
Use this code and the following chart for component identification.

Example:

Code	Number
AAS	2SD1757KS

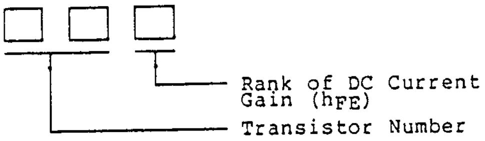


Fig. 5-7 Leadless Transistor Code

2. Leadless Diodes
Leadless diode numbers are indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three numerals.
Use this code and the following chart for component identification.

Code	Diode Number	Code	Diode Number
BE	1SV172		
MC	MA153	MC(s)	MA143
MH	MA151K	MH(s)	MA141K
MN	MA151WA	MN(s)	MA141WA
MO	MA152WA		
MT	MA151WK	MT(s)	MA141WK
MU	MA152WK		
M1D	MA160	M1P	MA714
M2A	MA122	S1A	1SR143
N	DAN202K	Z	DA106K
A3	1S2835	A5	1S2837
C1	HSM88S	C2	HSM276S
1A	MA110		
3.0L	MA3030L	4.3L	MA3043L
4.7M	MA3047M	5.1M	MA3051M
5.1L	MA3051L	5.6M	MA3056M
6.2L	MA3062L	6.8M	MA3068
6.8M	MA3068M	7.5H	MA3075H
7.5L	MA3075L	8.2M	MA3082M
9.1M	MA3091	9.1M	MA3091M
10L	MA3100L	56M	MA3056M
75L	MA3075L	82M	MA3082M
91M	MA3091M		
20	HZM6-B	27	RD2.7M-B
30	RD3.0M-B	51	RD5.1M-B2
56	RD5.6M-B	91	RD9.1M-B
102	RD10M-B2	122	RD12M-B2
163	RD16M-B3	182	RD18M-B2
271	RD2.7M-B	272	RD2.7M-B2
301	RD3.0M-B	362	RD3.6M-B2
391	RD3.9M-B1	512	RD5.1M-B2
561	RD5.6M-B	621	RD6.2M-B1
681	RD6.8M-B	683	RD6.8M-B3
911	RD9.1M-B		

* "(s)" in the above table shows a component with smaller size.

3. Leadless Resistors
The resistor value is indicated on the surface of the component, using a three-digit numbers, or one letter and one numeral.

(1) Identification for three digit numbers.
Read this code following the same procedure as when reading the color code on discrete resistors.

Example:

Code	Value
330	33×10^0 = 33 ohms
561	56×10^1 = 560 ohms
123	12×10^3 = 12K ohms
1R2	1 + 0.2 = 1.2 ohms

(R: Decimal point)

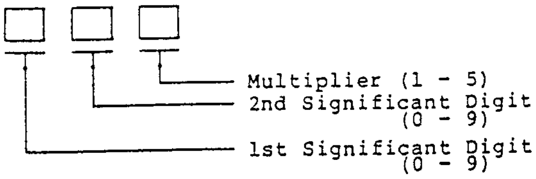


Fig. 5-8 Leadless Resistor Code

(2) Identification for one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Value
A	1
C	1.2
E	1.5
G	1.8
J	2.2
L	2.7
N	3.3
Q	3.9
S	4.7
U	5.6
W	6.8
Y	8.2

Example:

Code	Value
A1	$1 \times 10^1 = 10$ ohms
G2	$1.8 \times 10^2 = 180$ ohms
L3	$2.7 \times 10^3 = 2700$ ohms
S4	$4.7 \times 10^4 =$ 47K ohms
W5	$6.8 \times 10^5 =$ 680K ohms

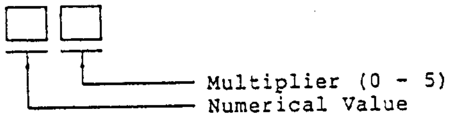
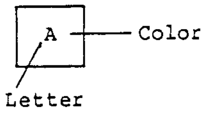


Fig. 5-9 Leadless Resistor Code

4. Leadless Capacitors

The capacitance value is indicated on the surface of the component, using body color and one letter, or one letter and one numeral.

(1) Identification for body color and one letter.

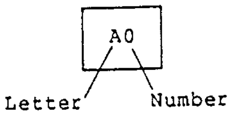


Body Color	Letter	Value
Red	A	1(PF)
	C	2
	E	3
	G	4
	J	5
	L	6
	N	7
	Q	8
	S	9
Black	A	10(PF)
	C	12
	E	15
	G	18
	J	22
	L	27
	N	33
	Q	39
	S	47
	U	56
	W	68
	Y	82
Blue	A	100(PF)
	C	120
	E	150
	G	180
	J	220
	L	270
	N	330
	Q	390
	S	470
	U	560
	W	680
	Y	820
White	A	0.001(μF)
	E	0.0015
	J	0.0022
	L	0.0027
	N	0.0033
	S	0.0047
	W	0.0068
Green	A	0.01(μF)
	E	0.015
	J	0.022
	N	0.033
	S	0.047
	U	0.056
	W	0.068
	Y	0.082
Yellow	A	0.1(μF)

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

(2) Identification for one letter and one numeral.



Letter /Number	Value
A0	1(PF)
H0	2
M0	3
d0	4
f0	5
m0	6
n0	7
t0	8
y0	9
A1	10(PF)
C1	12
E1	15
G1	18
J1	22
L1	27
N1	33
Q1	39
S1	47
U1	56
W1	68
Y1	82
A2	100(PF)
C2	120
E2	150
G2	180
J2	220
L2	270
N2	330
Q2	390
S2	470
U2	560
W2	680
Y2	820
A3	0.001(μF)
E3	0.0015
J3	0.0022
N3	0.0033
S3	0.0047
W3	0.0068
A4	0.01(μF)
E4	0.015
J4	0.022
N4	0.033
S4	0.047
U4	0.056
W4	0.068
A5	0.1

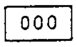
Example:

Letter /Number	Value
A0	1PF
A1	10PF

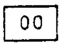
5. Leadless Jumper

The leadless jumper is indicated as shown below.

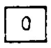
(1)



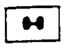
(2)



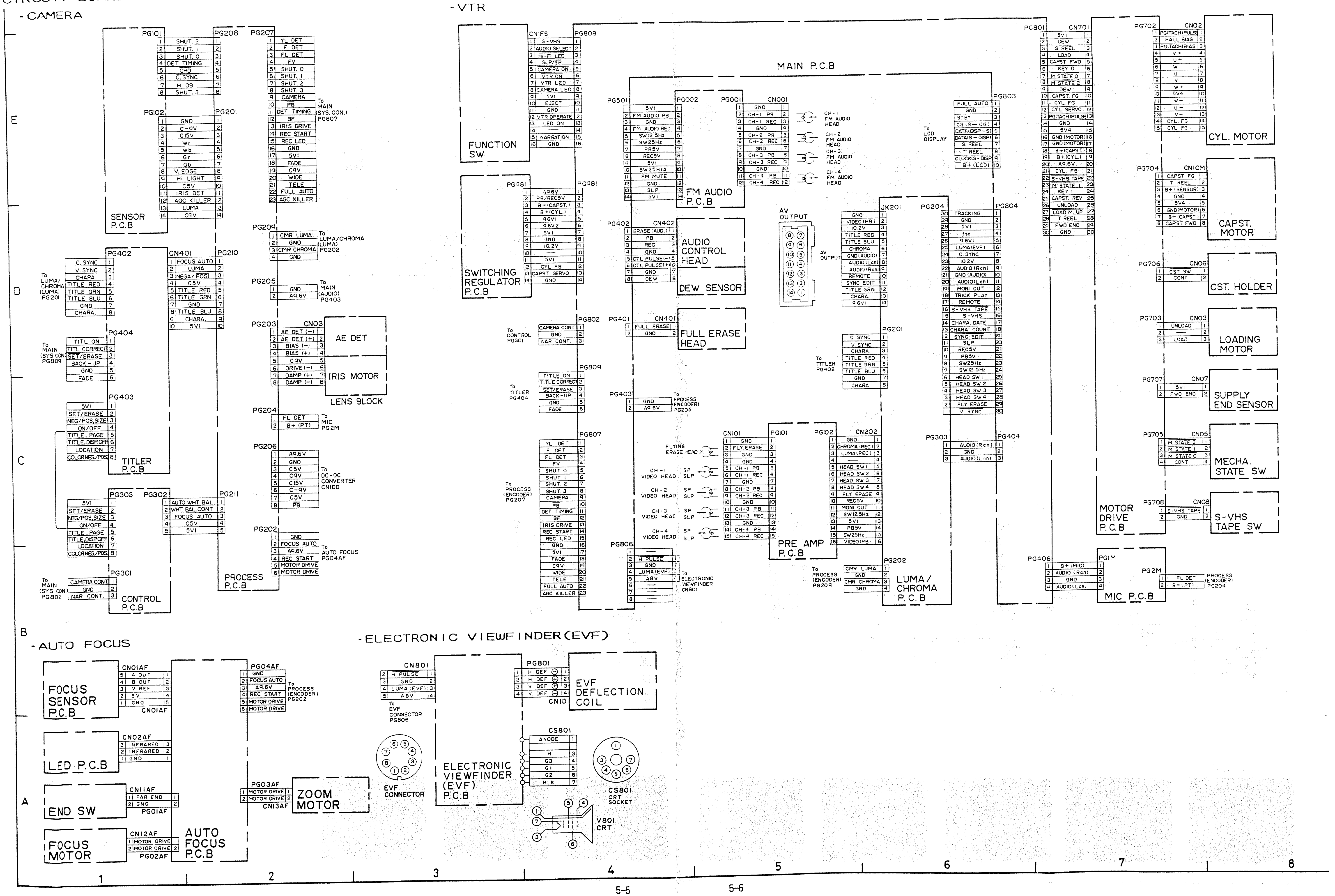
(3)



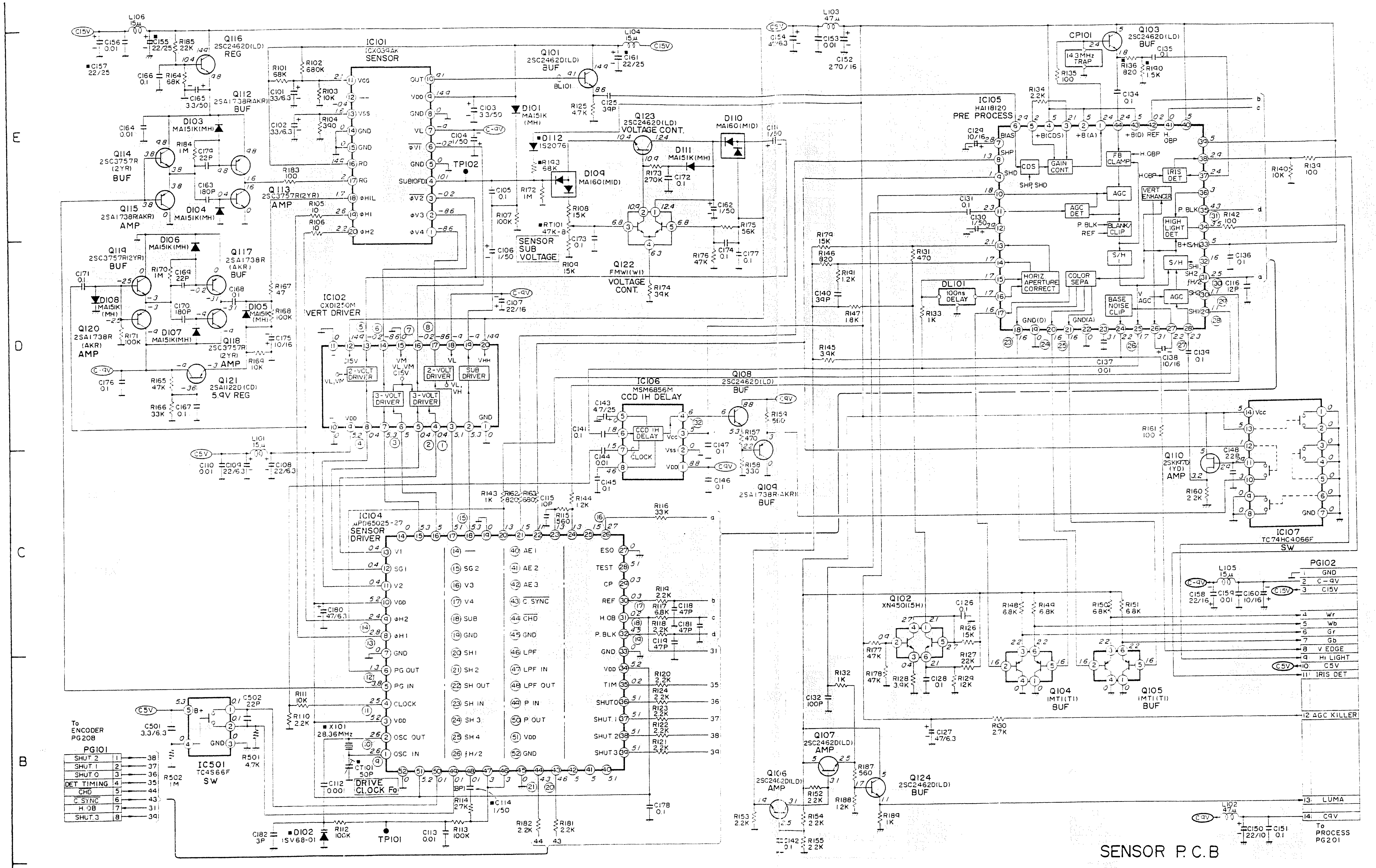
(4)



CIRCUIT BOARD CONNECTION DIAGRAM

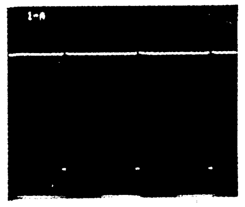

-CAMERA
SENSOR P.C.B
PG101
PG102
PG208
PG207
PG201
TITLER P.C.B
PG402
PG404
PG403
CN401
PG210
PG303
PG302
PG211
CONTROL P.C.B
PG301
PROCESS P.C.B
PG209
PG205
PG203
CN03
AE DET
IRIS MOTOR
LENS BLOCK
PG204
PG206
PG202
To MAIN (SYS. CON.) PG807
To LUMA/CHROMA (LUMA) PG202
To MAIN (AUDIO) PG403
To MIC PG2M
To DC-DC CONVERTER CNIDD
To AUTO FOCUS PG04AF
To LUMA/CHROMA (LUMA) PG201
To MAIN (SYS. CON.) PG809
To MAIN (SYS. CON.) PG802
-VTR
FUNCTION SW
CNIFS
PG808
SWITCHING REGULATOR P.C.B
PG981
MAIN P.C.B
PG501
PG002
PG001
CN001
FM AUDIO P.C.B
CH-1 FM AUDIO HEAD
CH-2 FM AUDIO HEAD
CH-3 FM AUDIO HEAD
CH-4 FM AUDIO HEAD
PG402
CN402
AUDIO CONTROL HEAD
DEW SENSOR
PG401
CN401
FULL ERASE HEAD
PG403
To PROCESS (ENCODER) PG205
PG802
To CONTROL PG301
PG809
To TITLER PG404
PG807
To PROCESS (ENCODER) PG207
PG806
To ELECTRONIC VIEWFINDER CN801
AV OUTPUT
JK201
PG204
PG804
PG201
To TITLER PG402
PG803
To LCD DISPLAY
CN101
PG101
PG102
CN202
FLYING ERASE HEAD
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
CH-3 VIDEO HEAD
CH-4 VIDEO HEAD
PRE AMP P.C.B
PG202
LUMA/CHROMA P.C.B
To PROCESS (ENCODER) PG209
PG303
PG404
PC801
CN701
MOTOR DRIVE P.C.B
PG702
CN02
CYL. MOTOR
PG704
CN1CM
CAPST. MOTOR
PG706
CN06
CST. HOLDER
PG703
CN03
LOADING MOTOR
PG707
CN07
SUPPLY END SENSOR
PG705
CN05
MECHA. STATE SW
PG708
CN08
S-VHS TAPE SW
PG406
PG1M
MIC P.C.B
PG2M
To PROCESS (ENCODER) PG204
-AUTO FOCUS
FOCUS SENSOR P.C.B
CN01AF
LED P.C.B
CN02AF
END SW
CN11AF
PG01AF
FOCUS MOTOR
CN12AF
PG02AF
AUTO FOCUS P.C.B
PG04AF
To PROCESS (ENCODER) PG202
PG03AF
CN13AF
ZOOM MOTOR
-ELECTRONIC VIEWFINDER(EVF)
CN801
To EVF CONNECTOR PG806
EVF CONNECTOR
ELECTRONIC VIEWFINDER (EVF) P.C.B
PG801
CN1D
EVF DEFLECTION COIL
CS801
CS801 CRT SOCKET
V801 CRT
E
D
C
B
A
1
2
3
4
5
6
7
8

SENSOR SCHEMATIC

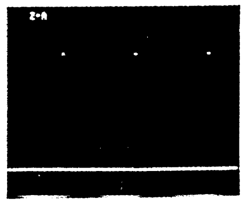

IC101 ICX039AK SENSOR
Q101 2SC2462D(LD) BUF
Q116 2SC2462D(LD) REG
Q112 2SA1738R(AKR) BUF
Q113 2SC3757R(2YR) AMP
Q114 2SC3757R (2YR) BUF
Q115 2SA1738R(AKR) AMP
Q119 2SC3757R(2YR) BUF
Q117 2SA1738R (AKR) BUF
Q120 2SA1738R (AKR) AMP
Q118 2SC3757R (2YR) AMP
Q121 2SA1122D(CD) 5.9V REG
IC102 CXD1210M VERT DRIVER
Q123 2SC2462D(LD) VOLTAGE CONT.
Q122 FMW1(W1) VOLTAGE CONT.
SENSOR SUB VOLTAGE
IC105 HA118120 PRE PROCESS
CP101 14.3MHz TRAP
Q103 2SC2462D(LD) BUF
IC106 MSM6856M CCD 1H DELAY
Q108 2SC2462D(LD) BUF
Q109 2SA1738R(AKR) BUF
IC104 μPD16502S-27 SENSOR DRIVER
X101 28.36MHz
DRIVE CLOCK Fo
IC501 TC4S66F SW
To ENCODER PG208
PG101
SHUT 2
SHUT 1
SHUT 0
DET TIMING
CHD
C SYNC
H OB
SHUT 3
Q102 XN4501(5H)
Q104 IMT1(T1) BUF
Q105 IMT1(T1) BUF
Q106 2SC2462D(LD) AMP
Q107 2SC2462D(LD) AMP
Q124 2SC2462D(LD) BUF
Q110 2SK170 (YD) AMP
IC107 TC74HC4066F SW
PG102
GND
C-9V
C15V
Wr
Wb
Gr
Gb
V EDGE
H LIGHT
C5V
IRIS DET
AGC KILLER
LUMA
C9V
To PROCESS PG201
TP101
TP102
SENSOR P.C.B
A
B
C
D
E

NOTE: MARK "■" IS DISCRETE COMPONENT

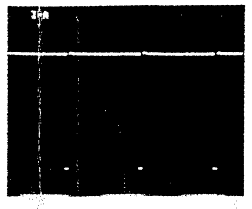
1-A IC102-3 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



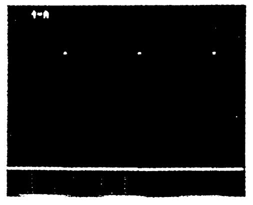
2-A IC102-4 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



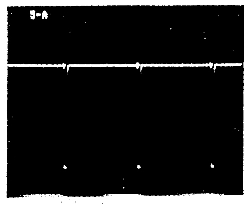
3-A IC102-6 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



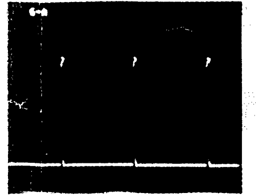
4-A IC102-8 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



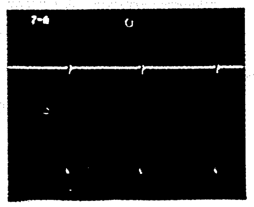
5-A IC102-13 9.3Vp-p
2V/20.0μ sec.cm
COLOR CHART



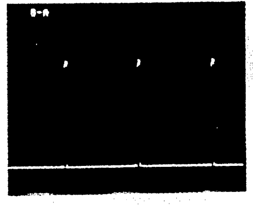
6-A IC102-14 9.6Vp-p
2V/20.0μ sec.cm
COLOR CHART



7-A IC102-16 9.7Vp-p
2V/20.0μ sec.cm
COLOR CHART



8-A IC102-17 9.4Vp-p
2V/20.0μ sec.cm
COLOR CHART

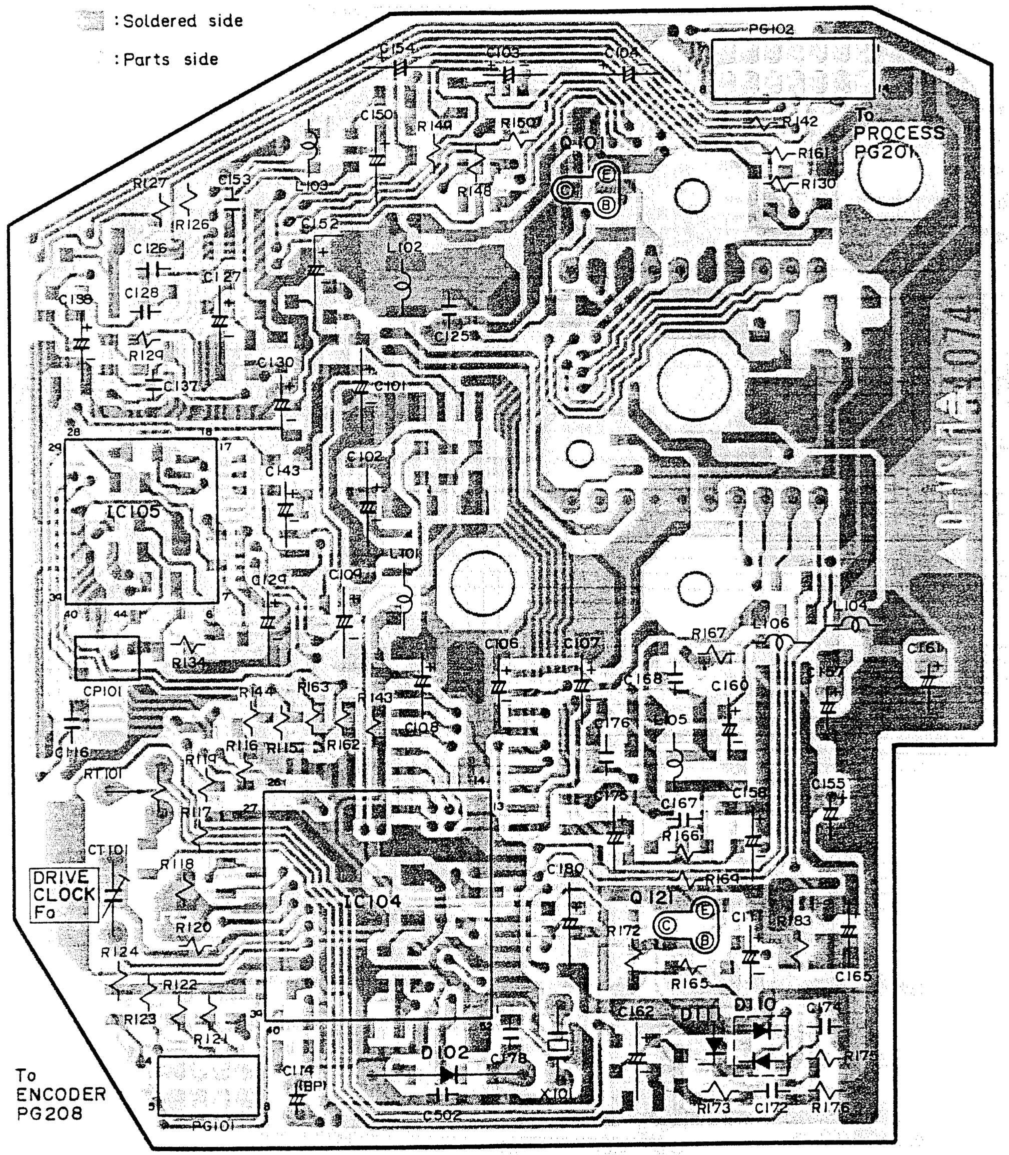


SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22	MOTOR DRIVE	5-43
AUDIO	5-31	MIC	5-48
CAPUSTAN MOTOR	5-45	PROCESS	5-11
CONTROL	5-19	PRE AMP	5-33
CHROMA	5-37	REGULATOR	5-27
DC-DC CONVERTER	5-46	SENSOR	5-7
ENCODER	5-15	SERVO	5-25
ELECTRONIC VIEWFINDER(EVF)	5-20	SYSTEM CONTROL	5-23
FM AUDIO	5-47	SWITCING REGULATOR	5-46
FOCUS SENSOR	5-21	TITLER	5-17
FUNCTION SW	5-27	TROUBLE DET	5-45
LUMINANCE	5-35		

1 2 3 4 5 6 7 8

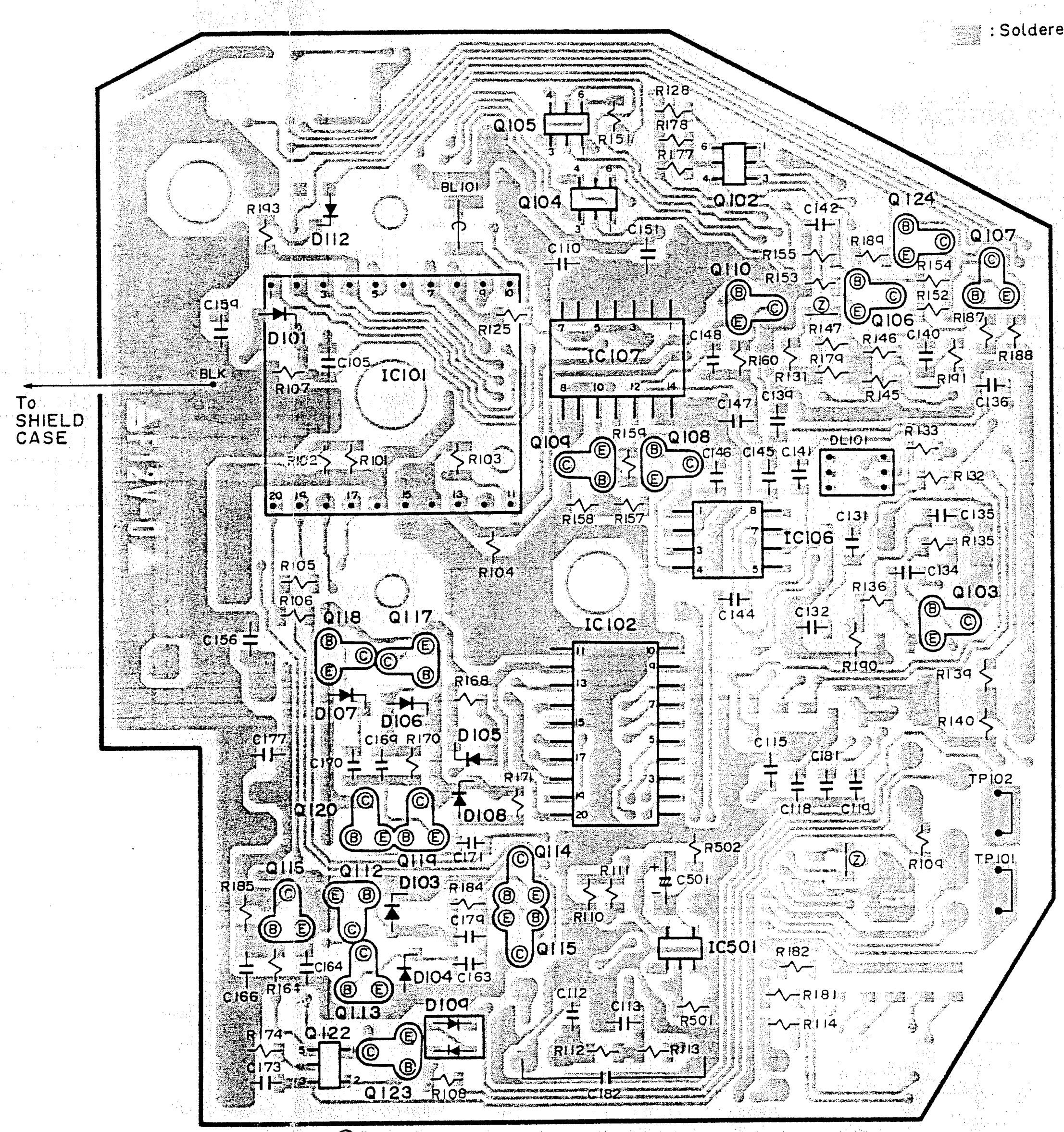
SENSOR CIRCUIT BOARD

▨ : Soldered side
□ : Parts side


PG102
To PROCESS PG201
To ENCODER PG208
DRIVE CLOCK Fo
IC104
IC105
CP101
CT101
RT101
PG101
X101
L101
L102
D102
D110
Q101
Q121
C502
C109
C106
C154
C150
C153
C152
C126
C128
C137
C130
C101
C102
C143
C129
C104
C106
C107
C160
C161
C155
C156
C158
C162
C114
C116
C180
R140
R150
R142
R161
R130
R148
R127
R126
R129
R134
R144
R163
R143
R116
R152
R162
R119
R117
R118
R120
R124
R122
R123
R121
R165
R166
R167
R172
R173
R175
R176
R183

SENSOR P.C.B (COMPONENT SIDE)

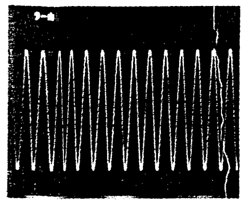
▨ : Soldered side


To SHIELD CASE
BLK
BL101
IC101
IC102
IC106
IC107
IC501
DL101
D101
D103
D104
D105
D106
D107
D108
D109
D112
Q102
Q103
Q104
Q105
Q106
Q107
Q108
Q109
Q110
Q112
Q113
Q114
Q115
Q116
Q117
Q118
Q119
Q120
Q122
Q123
Q124
TP101
TP102
R101
R102
R103
R104
R105
R106
R107
R109
R110
R111
R112
R113
R114
R125
R128
R131
R132
R133
R134
R135
R136
R140
R141
R145
R146
R147
R151
R152
R153
R154
R155
R157
R158
R159
R160
R164
R167
R168
R170
R171
R174
R177
R178
R179
R181
R182
R184
R185
R188
R189
R190
R193
R501
R502
C105
C110
C112
C113
C115
C118
C119
C131
C132
C134
C135
C136
C139
C140
C141
C142
C144
C145
C146
C147
C148
C151
C156
C159
C163
C164
C166
C169
C170
C171
C173
C177
C179
C181
C182
C501

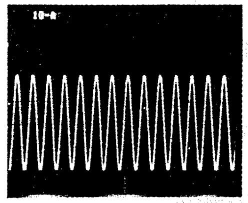
NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

SENSOR P.C.B (SOLDER SIDE)

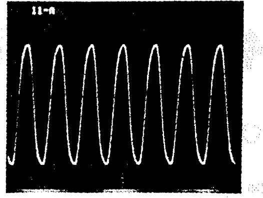
9-A IC104-1 2.6Vp-p
0.5V/50.0nsec.cm
COLOR CHART



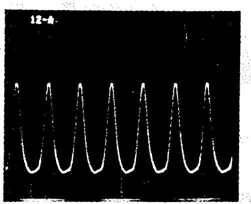
10-A IC104-2 2.1Vp-p
0.5V/50.0nsec.cm
COLOR CHART



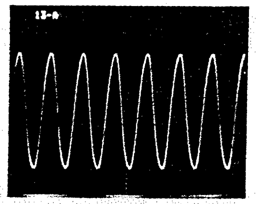
11-A IC104-4 5.2Vp-p
1V/50.0nsec.cm
COLOR CHART



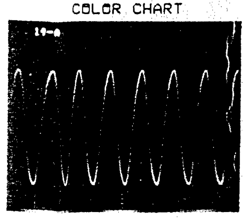
12-A IC104-6 4.0Vp-p
1V/50.0nsec.cm
COLOR CHART



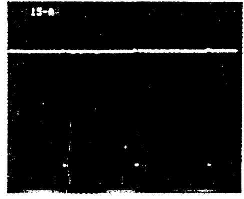
13-A IC104-8 5.1Vp-p
1V/50.0nsec.cm
COLOR CHART



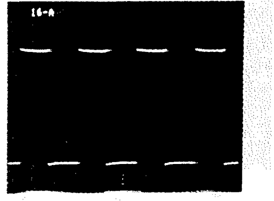
14-A IC104-9 5.1Vp-p
1V/50.0nsec.cm
COLOR CHART



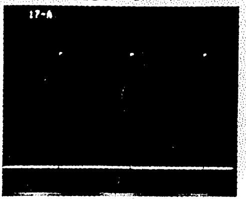
15-A IC104-18 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



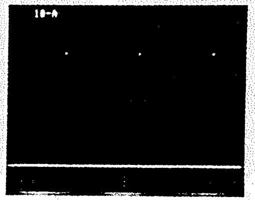
16-A IC104-26 5.3Vp-p
1V/50.0μ sec.cm
COLOR CHART



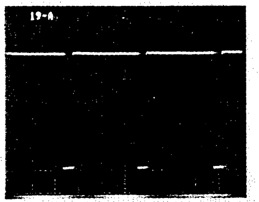
17-A IC104-30 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



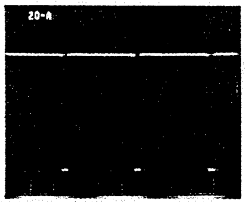
18-A IC104-31 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



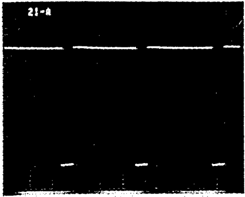
19-A IC104-32 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



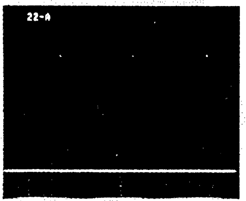
20-A IC104-43 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



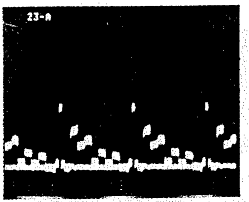
21-A IC104-44 5.3Vp-p
1V/20.0μ sec.cm
COLOR CHART



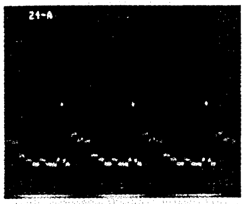
22-A IC104-49 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



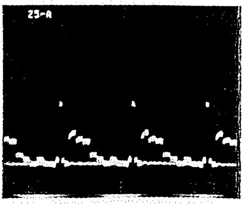
23-A IC105-18 650mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



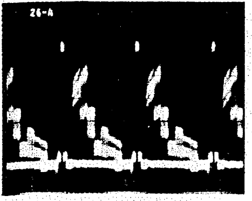
24-A IC105-20 600mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



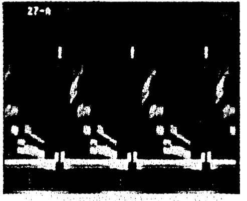
25-A IC105-21 600mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



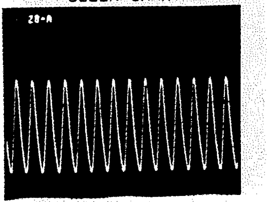
26-A IC105-25 560mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



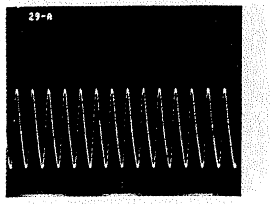
27-A IC105-28 530mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



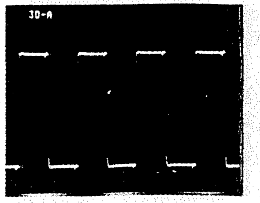
28-A IC105-29 2.1Vp-p
0.5V/100nsec.cm
COLOR CHART



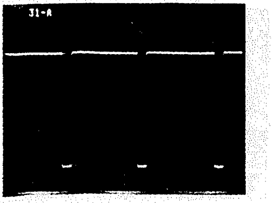
29-A IC105-30 1.8Vp-p
0.5V/100nsec.cm
COLOR CHART



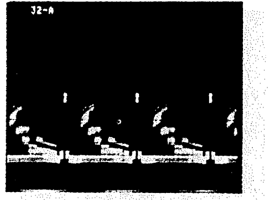
30-A IC105-31 5.1Vp-p
1V/50.0μ sec.cm
COLOR CHART



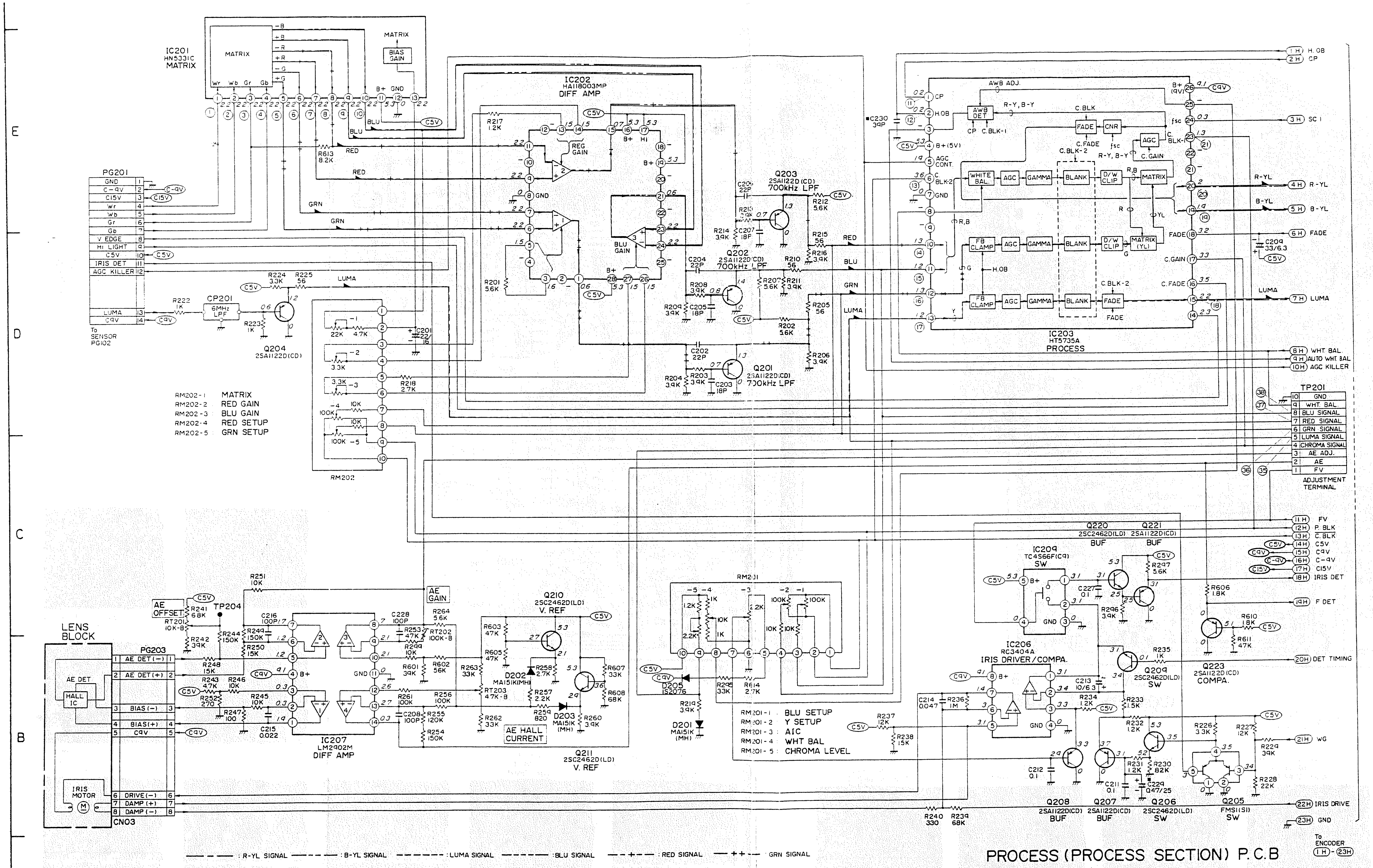
31-A IC105-35 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



32-A IC106-4 1.6Vp-p
0.5V/20.0μ sec.cm
COLOR CHART

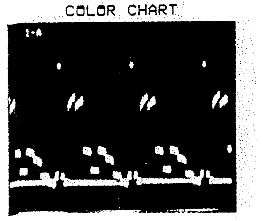


PROCESS(PROCESS SECTION) SCHEMATIC

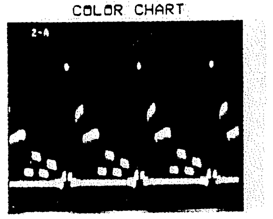

IC201 HN5331C MATRIX
MATRIX
BIAS GAIN
IC202 HA118003MP DIFF AMP
REG GAIN
BLU GAIN
Q203 2SA1122D(CD) 700kHz LPF
Q202 2SA1122D(CD) 700kHz LPF
Q201 2SA1122D(CD) 700kHz LPF
Q204 2SA1122D(CD)
CP201 6MHz LPF
PG201
GND
C-9V
C15V
Wr
Wb
Gr
Gb
V EDGE
HI LIGHT
C5V
IRIS DET
AGC KILLER
LUMA
C9V
To SENSOR PG102
RM202
RM202-1 MATRIX
RM202-2 RED GAIN
RM202-3 BLU GAIN
RM202-4 RED SETUP
RM202-5 GRN SETUP
IC203 HT5735A PROCESS
AWB ADJ.
AWB DET
WHITE BAL.
AGC
GAMMA
BLANK
D/W CLIP
MATRIX
MATRIX (YL)
FB CLAMP
FADE
CNR
H.OB
CP
SC I
R-YL
B-YL
FADE
LUMA
WHT BAL
AUTO WHT BAL
AGC KILLER
TP201
GND
WHT BAL
BLU SIGNAL
RED SIGNAL
GRN SIGNAL
LUMA SIGNAL
CHROMA SIGNAL
AE ADJ.
AE
FV
ADJUSTMENT TERMINAL
FV
P. BLK
C.BLK
C5V
C9V
C15V
C-9V
C15V
IRIS DET
F DET
DET TIMING
WG
IRIS DRIVE
GND
Q220 2SC2462D(LD) BUF
Q221 2SA1122D(CD) BUF
IC209 TC4S66F(C9) SW
IC206 RC3404A IRIS DRIVER/COMPA.
Q209 2SC2462D(LD) SW
Q223 2SA1122D(CD) COMPA.
Q208 2SA1122D(CD) BUF
Q207 2SA1122D(CD) BUF
Q206 2SC2462D(LD) SW
Q205 FMS1(S1) SW
RM201
RM201-1 BLU SETUP
RM201-2 Y SETUP
RM201-3 AIC
RM201-4 WHT BAL
RM201-5 CHROMA LEVEL
D205 1S2076
D201 MA151K (MH)
LENS BLOCK
AE DET
HALL IC
IRIS MOTOR
PG203
AE DET(-)
AE DET(+)
BIAS(-)
BIAS(+)
C9V
DRIVE(-)
DAMP(+)
DAMP(-)
CN03
AE OFFSET
TP204
AE GAIN
IC207 LM2902M DIFF AMP
Q210 2SC2462D(LD) V. REF
Q211 2SC2462D(LD) V. REF
D202 MA151K(MH)
D203 MA151K (MH)
AE HALL CURRENT
To ENCODER
1H - 23H
: R-YL SIGNAL
: B-YL SIGNAL
: LUMA SIGNAL
: BLU SIGNAL
: RED SIGNAL
GRN SIGNAL

PROCESS (PROCESS SECTION) P.C.B

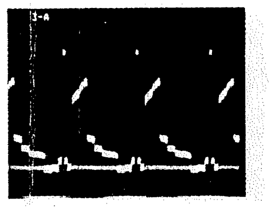
1-A IC201-1 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



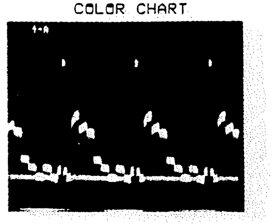
2-A IC201-2 550mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



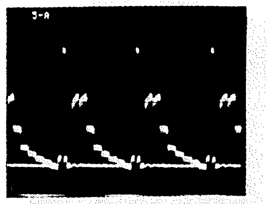
3-A IC201-3 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



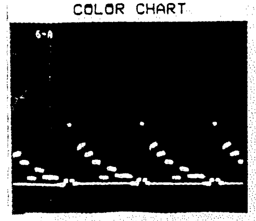
4-A IC201-4 550mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



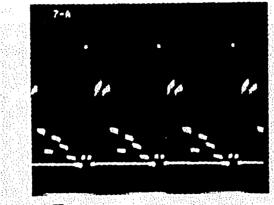
5-A IC201-5 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



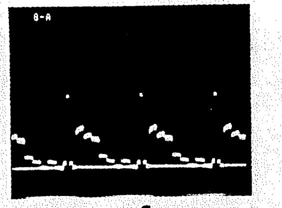
6-A IC201-6 150mVp-p
50mV/20.0μ sec.cm
COLOR CHART



7-A IC201-7 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



8-A IC201-8 340mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



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FM AUDIO	5-47	SWITCING REGULATOR	5-46
FOCUS SENSOR	5-21	TITLER	5-17
FUNCTION SW	5-27	TROUBLE DET	5-45
LUMINANCE	5-35		

PROCESS CIRCUIT BOARD

▨ : Soldered side
░ : Parts side

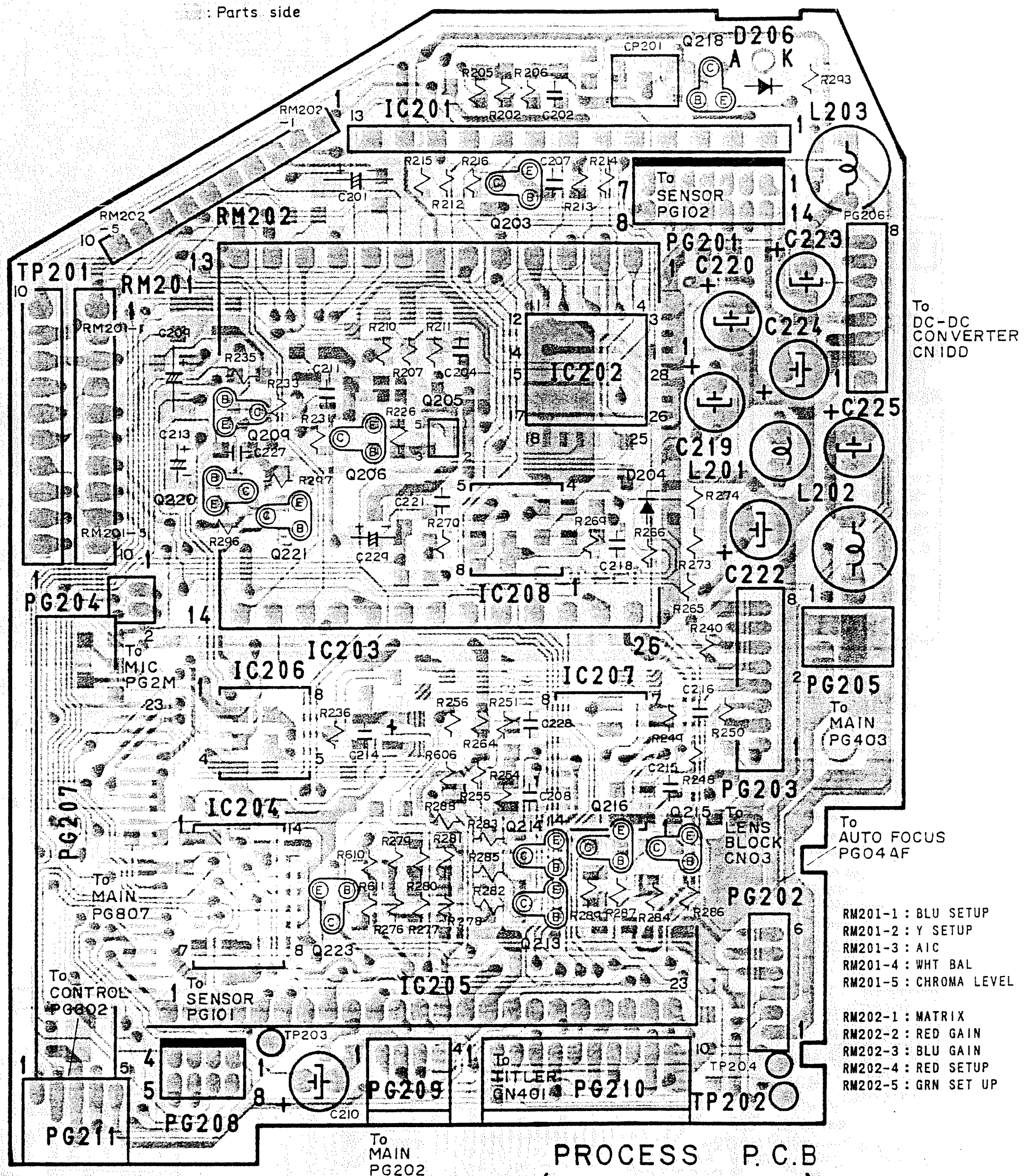
E

D

C

B

A

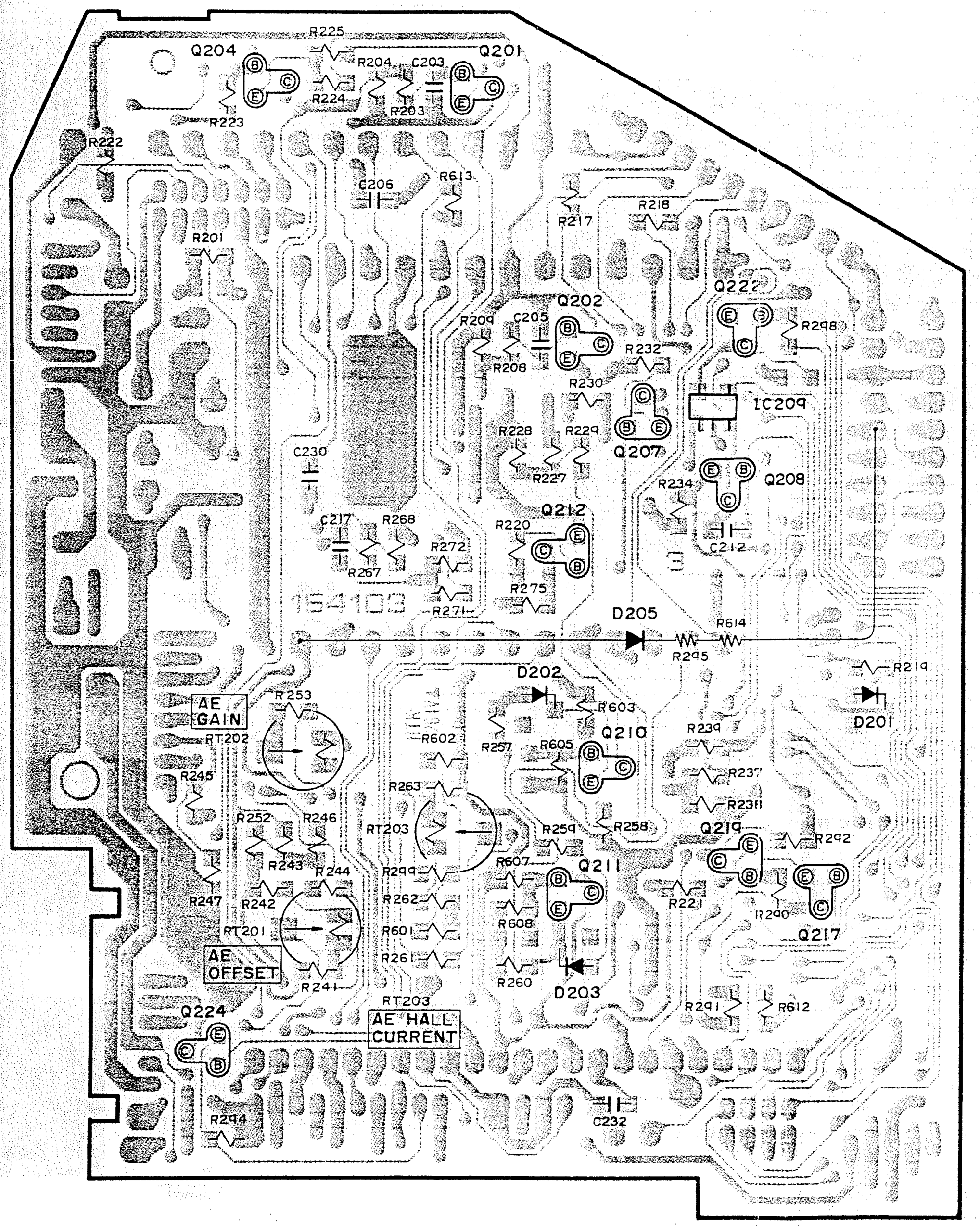

IC201
IC202
IC203
IC204
IC205
IC206
IC207
IC208
RM201
RM202
TP201
TP202
TP203
TP204
PG201
PG202
PG203
PG204
PG205
PG206
PG207
PG208
PG209
PG210
PG211
L201
L202
L203
D204
D206
A K
C219
C220
C222
C223
C224
C225
C210
CP201
Q203
Q205
Q206
Q209
Q213
Q214
Q215
Q216
Q218
Q220
Q221
Q223
To SENSOR PG102
To DC-DC CONVERTER CN1DD
To MJC PG2M
To MAIN PG403
To LENS BLOCK CN03
To AUTO FOCUS PG044F
To MAIN PG807
To CONTROL PG802
To SENSOR PG101
To MAIN PG202
FILTER CN401

RM201-1 : BLU SETUP
RM201-2 : Y SETUP
RM201-3 : AIC
RM201-4 : WHT BAL
RM201-5 : CHROMA LEVEL

RM202-1 : MATRIX
RM202-2 : RED GAIN
RM202-3 : BLU GAIN
RM202-4 : RED SETUP
RM202-5 : GRN SET UP

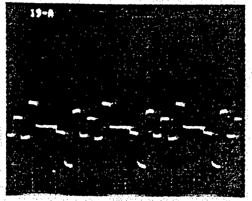
PROCESS P.C.B
(COMPONENT SIDE)

▨ : Soldered side

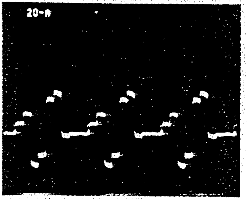

Q201
Q202
Q204
Q207
Q208
Q210
Q211
Q212
Q217
Q219
Q222
Q224
IC209
D201
D202
D203
D205
AE GAIN
RT202
RT203
RT201
AE OFFSET
AE HALL CURRENT
C205
C206
C212
C217
C230
C232

PROCESS P.C.B
(SOLDER SIDE)

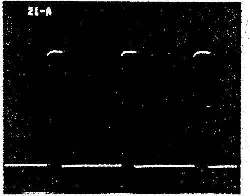
19-A IC203-19 1.5Vp-p
0.5V/20.0μ sec.cm
COLOR CHART



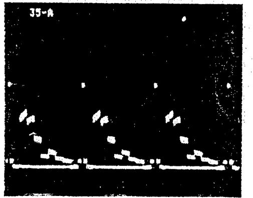
20-A IC203-20 680mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



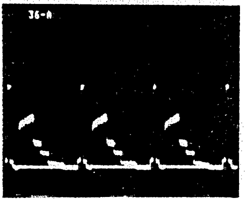
21-A IC203-23 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



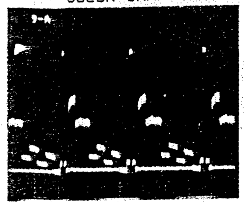
35-A TP201-5 380mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



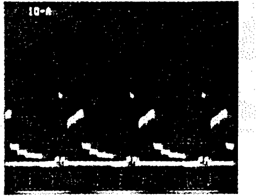
36-A TP201-6 380mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



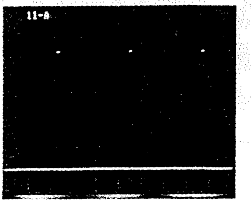
9-A IC201-9 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



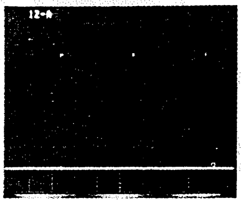
10-A IC201-10 320mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



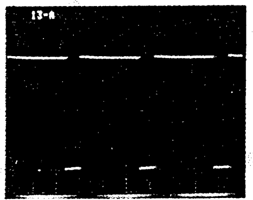
11-A IC203-1 520mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



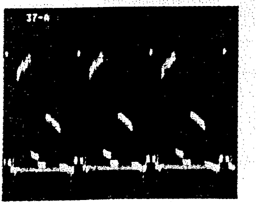
12-A IC203-2 510mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



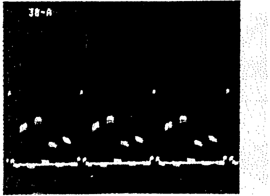
13-A IC203-6 5.0Vp-p
1V/20.0μ sec.cm
COLOR CHART



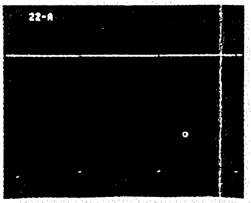
37-A TP201-7 270mVp-p
50mV/20.0μ sec.cm
COLOR CHART



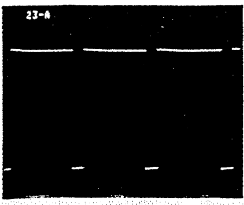
38-A TP201-8 340mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



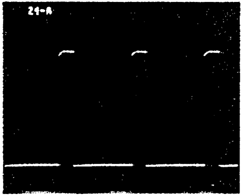
22-A IC205-1 5.2Vp-p
1V/5.0msec.cm
COLOR CHART



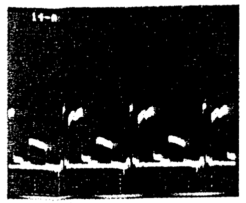
23-A IC205-3 5.3Vp-p
1V/20.0μ sec.cm
COLOR CHART



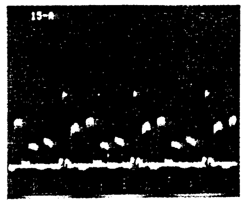
24-A IC205-4 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



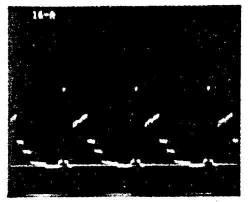
14-A IC203-10 280mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



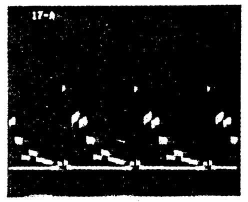
15-A IC203-11 340mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



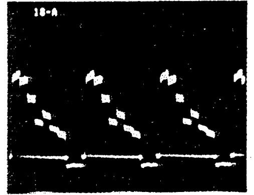
16-A IC203-12 35mVp-p
10mV/20.0μ sec.cm
COLOR CHART



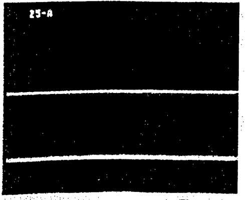
17-A IC203-13 37mVp-p
10mV/20.0μ sec.cm
COLOR CHART



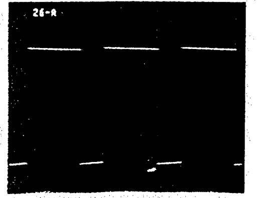
18-A IC203-15 860mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



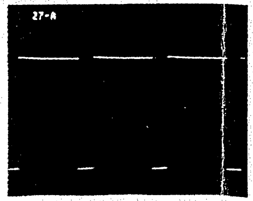
25-A IC205-5 720mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



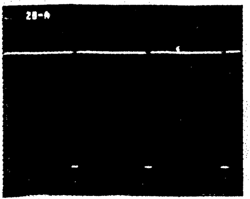
26-A IC205-6 5.3Vp-p
1V/5.0msec.cm
COLOR CHART



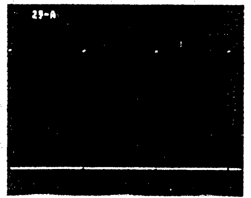
27-A IC205-7 5.0Vp-p
1V/20.0μ sec.cm
COLOR CHART



28-A IC205-8 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART

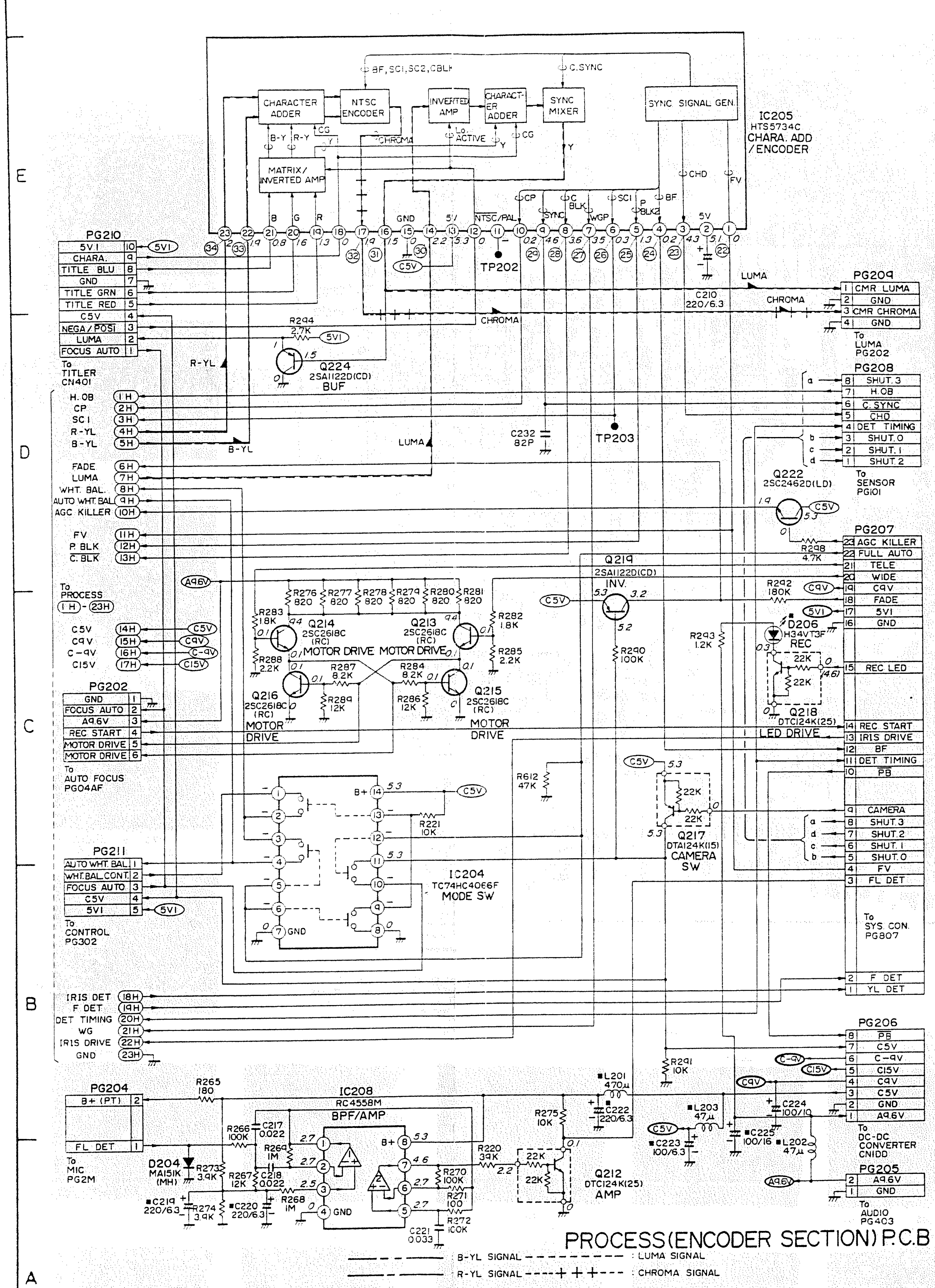


29-A IC205-9 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



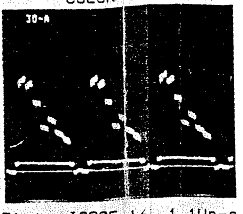
1 2 3 4 5 6 7 8

PROCESS(ENCODER SECTION) SCHEMATIC

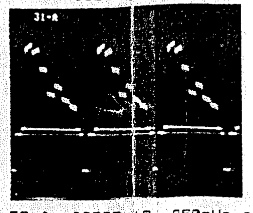

CHARACTER ADDER
NTSC ENCODER
INVERTED AMP
CHARACTER ADDER
SYNC MIXER
SYNC SIGNAL GEN.
MATRIX/ INVERTED AMP
IC205 HTS5734C CHARA. ADD /ENCODER
BF,SC1,SC2,CBLK
C.SYNC
PG210
5V1
CHARA.
TITLE BLU
GND
TITLE GRN
TITLE RED
C5V
NEGA/POSI
LUMA
FOCUS AUTO
To TITLER CN401
H.OB
CP
SC1
R-YL
B-YL
FADE
LUMA
WHT. BAL.
AUTO WHT BAL
AGC KILLER
FV
P.BLK
C.BLK
To PROCESS (1H)-(23H)
C5V
C9V
C-9V
C15V
PG202
GND
FOCUS AUTO
A9.6V
REC START
MOTOR DRIVE
MOTOR DRIVE
To AUTO FOCUS PG04AF
PG211
AUTO WHT BAL
WHT.BAL.CONT
FOCUS AUTO
C5V
5V1
To CONTROL PG302
IRIS DET
F DET
DET TIMING
WG
IRIS DRIVE
GND
PG204
B+ (PT)
FL DET
To MIC PG2M
TP202
TP203
Q224 2SA1122D(CD) BUF
R294 2.7K
C210 220/6.3
C232 82P
Q222 2SC2462D(LD)
Q219 2SA1122D(CD) INV.
Q214 2SC2618C (RC) MOTOR DRIVE
Q213 2SC2618C (RC) MOTOR DRIVE
Q216 2SC2618C (RC) MOTOR DRIVE
Q215 2SC2618C (RC) MOTOR DRIVE
D206 H34VT3F REC
Q218 DTC124K(25) LED DRIVE
Q217 DTA124K(15) CAMERA SW
IC204 TC74HC4066F MODE SW
IC208 RC4558M BPF/AMP
Q212 DTC124K(25) AMP
D204 MA151K (MH)
L201 470μ
L203 47μ
L202 47μ
PG209
CMR LUMA
GND
CMR CHROMA
GND
To LUMA PG202
PG208
SHUT.3
H.OB
C.SYNC
CHD
DET TIMING
SHUT.0
SHUT.1
SHUT.2
To SENSOR PG101
PG207
AGC KILLER
FULL AUTO
TELE
WIDE
C9V
FADE
5V1
GND
REC LED
REC START
IRIS DRIVE
BF
DET TIMING
PB
CAMERA
SHUT.3
SHUT.2
SHUT.1
SHUT.0
FV
FL DET
To SYS CON. PG807
F DET
YL DET
PG206
PB
C5V
C-9V
C15V
C9V
C5V
GND
A9.6V
To DC-DC CONVERTER CN100
PG205
A9.6V
GND
To AUDIO PG403
PROCESS(ENCODER SECTION) P.C.B
B-YL SIGNAL
LUMA SIGNAL
R-YL SIGNAL
CHROMA SIGNAL

NOTE: • MARK "■" IS DISCRETE COMPONENT.
• ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
(FOR EXAMPLE, READ R123 IS R1123 IN PARTS LIST.)

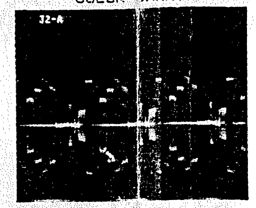
30-A IC205-14 880mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



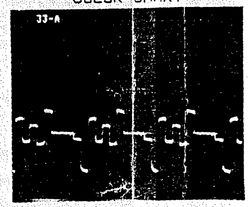
31-A IC205-16 1.1Vp-p
0.2V/20.0μ sec.cm
COLOR CHART



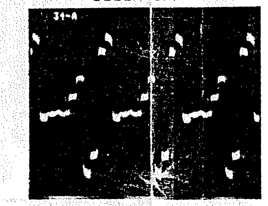
32-A IC205-17 850mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



33-A IC205-22 1.4Vp-p
0.5V/20.0μ sec.cm
COLOR CHART

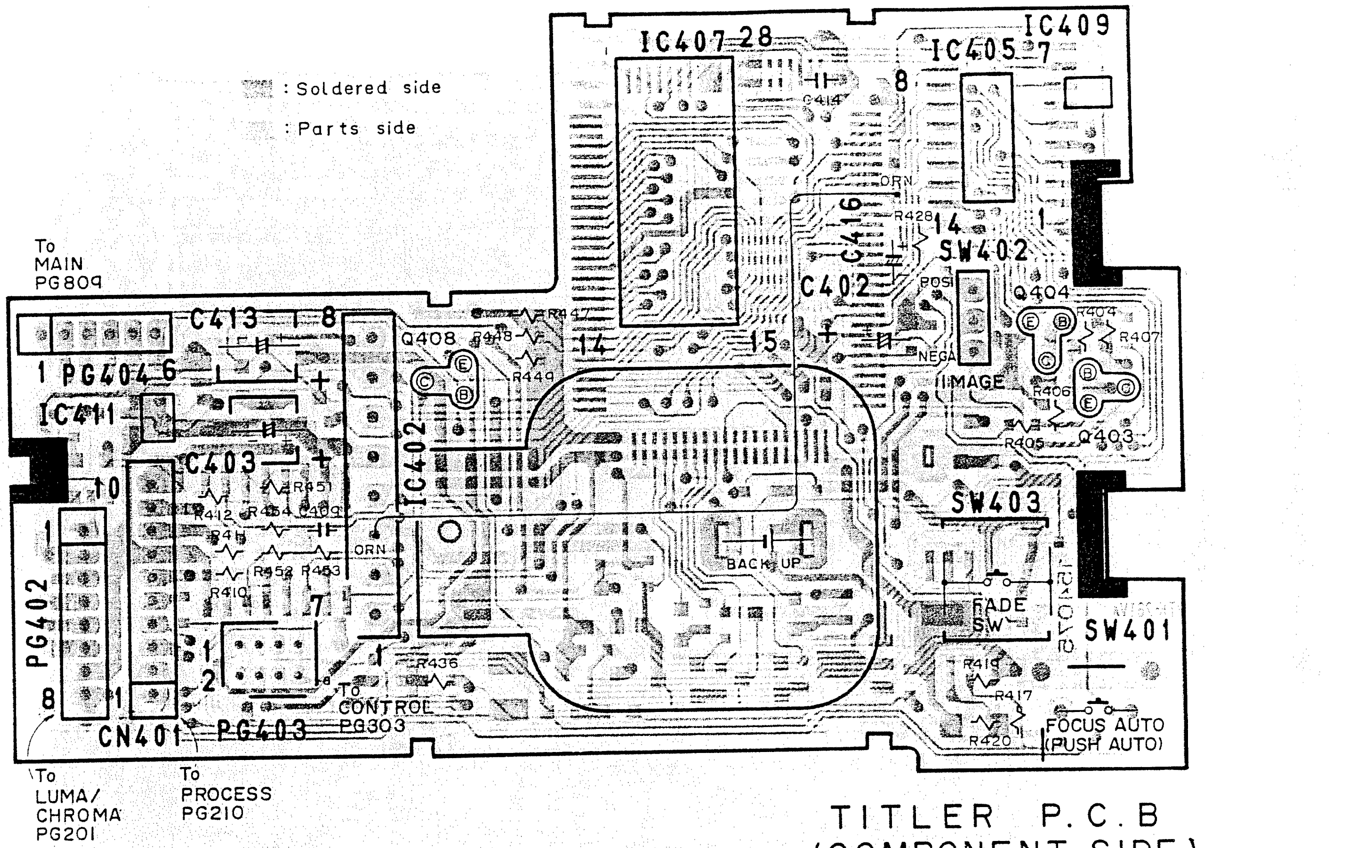


34-A IC205-23 650mVp-p
0.1V/20.0μ sec.cm
COLOR CHART

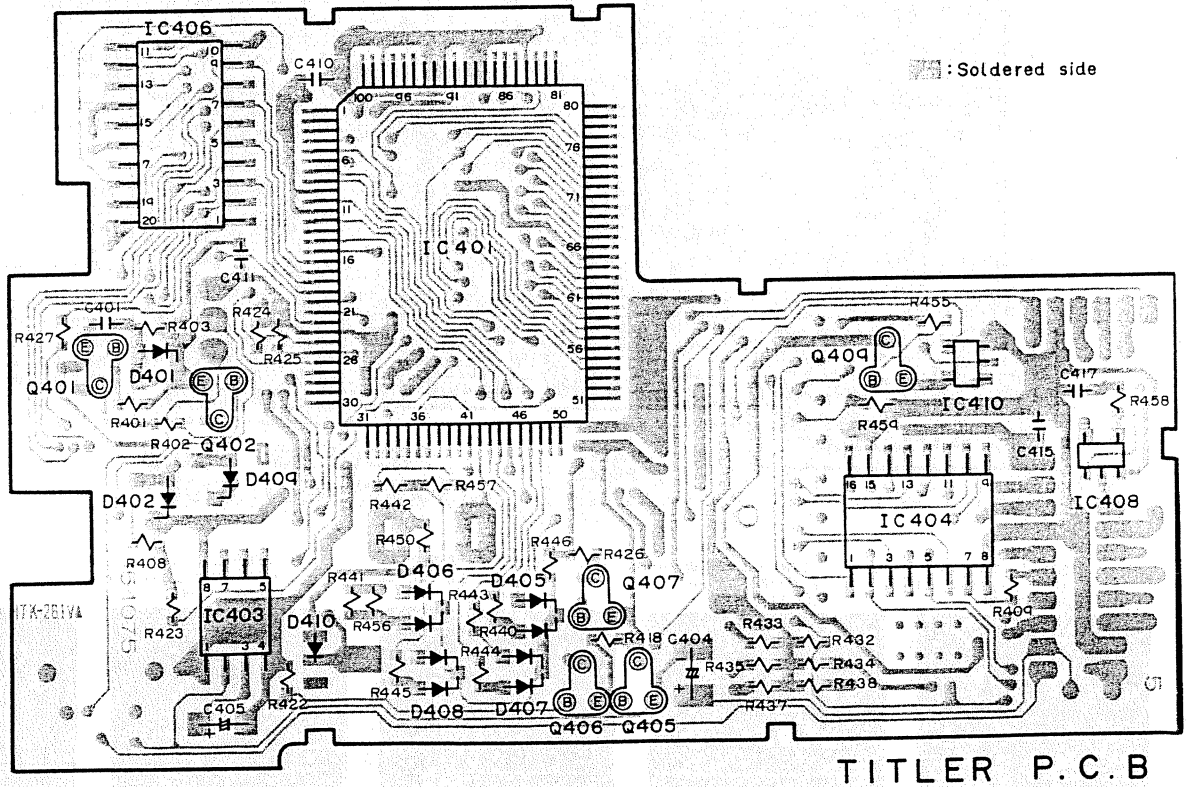


SCHEMATIC	PAGE
AUTO FOCUS-LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

TITLER CIRCUIT BOARD

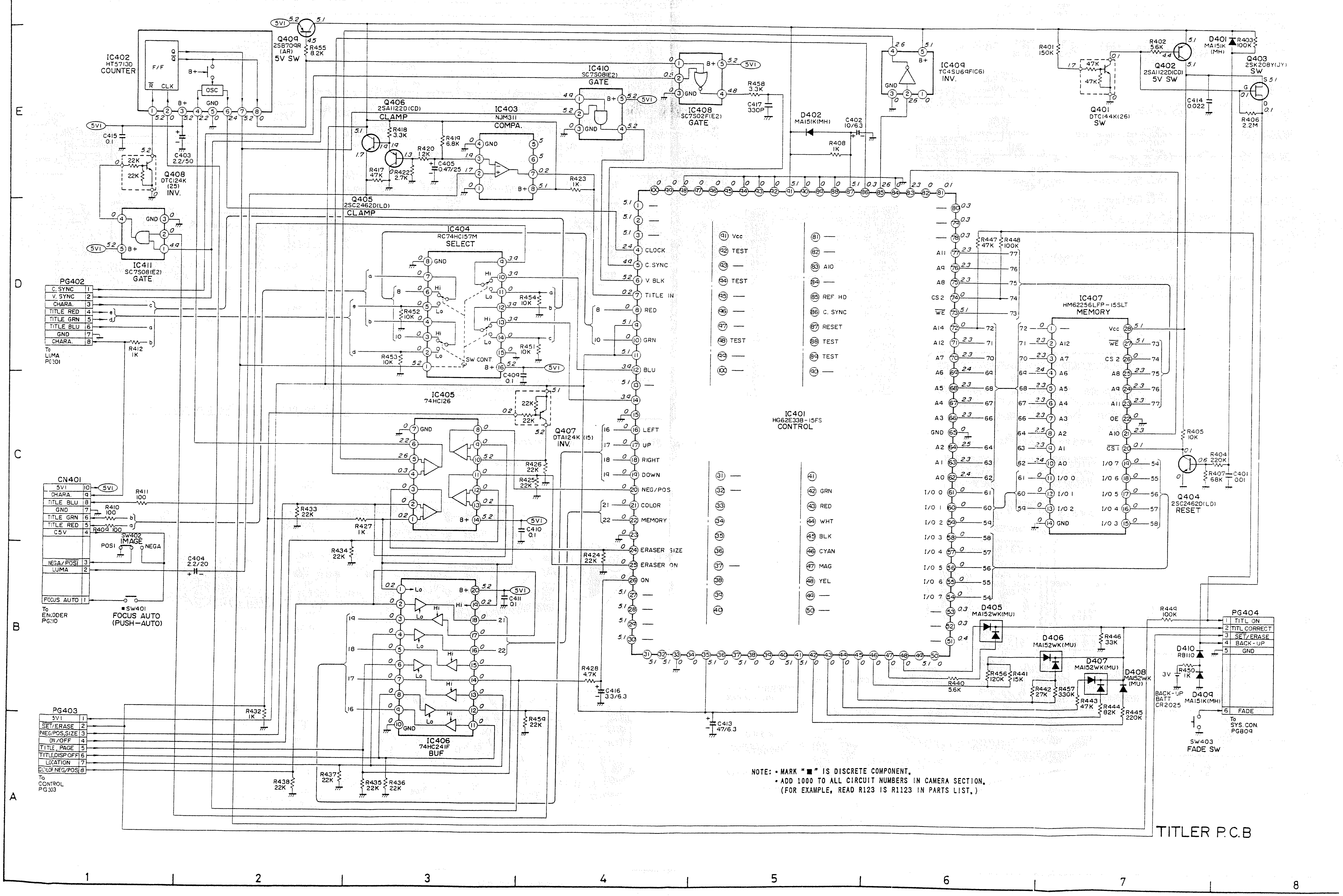

▨ : Soldered side
▨ : Parts side
To MAIN PG809
IC407
IC405
IC409
IC411
IC403
IC402
C413
C416
C402
PG404
PG402
PG403
CN401
SW402
SW403
SW401
Q408
Q404
Q403
IMAGE
NEGA
POSI
BACK UP
FADE SW
FOCUS AUTO (PUSH AUTO)
To CONTROL PG303
To LUMA/ CHROMA PG201
To PROCESS PG210

TITLER P.C.B
(COMPONENT SIDE)


▨ : Soldered side
IC406
IC401
IC404
IC403
IC408
IC410
Q401
Q402
Q404
Q405
Q406
Q407
Q409
D401
D402
D405
D406
D407
D408
D409
D410

TITLER P.C.B
(SOLDER SIDE)

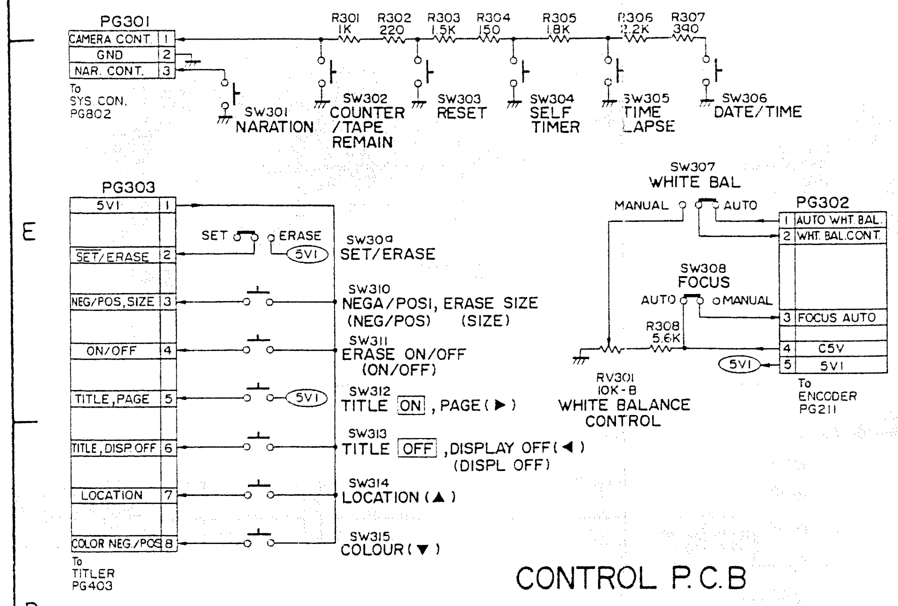
TITLER SCHEMATIC



IC402 HT5713D COUNTER
F/F
OSC
Q409 2SB709R (AR) 5V SW
R455 8.2K
IC410 SC7S08(E2) GATE
IC408 SC7S02F(E2) GATE
R458 3.3K
C417 330P
IC409 TC4SU69F(C6) INV.
R401 150K
R402 5.6K
Q401 DTC144K(26) SW
Q402 2SA1122D(CD) 5V SW
D401 MA151K (MH)
R403 100K
Q403 2SK208Y(JY) SW
C414 0.022
R406 2.2M
Q406 2SA1122D(CD) CLAMP
IC403 NJM311 COMPA.
R418 3.3K
R419 6.8K
R420 1.2K
C405 0.47/25
R417 47K
R422 2.7K
R423 1K
Q405 2SC2462D(LD) CLAMP
D402 MA151K(MH)
C402 10/6.3
R408 1K
C415 0.1
C403 2.2/50
Q408 DTC124K (25) INV.
IC411 SC7S08(E2) GATE
IC404 RC74HC157M SELECT
R454 10K
R452 10K
R451 10K
R453 10K
SW CONT
C409 0.1
PG402
C. SYNC
V. SYNC
CHARA.
TITLE RED
TITLE GRN
TITLE BLU
GND
CHARA.
To LUMA PG301
R412 1K
IC405 74HC126
Q407 DTA124K (15) INV.
R426 22K
R425 22K
C410 0.1
CN401
5V1
CHARA.
TITLE BLU
GND
TITLE GRN
TITLE RED
C5V
NEGA/POSI
LUMA
FOCUS AUTO
To ENCODER PG210
R411 100
R410 100
R404 100
SW402 IMAGE
POSI
NEGA
C404 2.2/20
SW401 FOCUS AUTO (PUSH-AUTO)
R433 22K
R427 1K
R434 22K
IC406 74HC241F BUF
C411 0.1
R459 22K
PG403
5V1
SET/ERASE
NEG/POS,SIZE
ON/OFF
TITLE PAGE
TITLE DISP OFF
LOCATION
COLOR NEG/POS
To CONTROL PG303
R432 1K
R438 22K
R437 22K
R435 22K
R436 22K
R424 22K
R428 4.7K
C416 33/6.3
C413 47/6.3
IC401 HG62E33B-15FS CONTROL
CLOCK
C. SYNC
V. BLK
TITLE IN
RED
GRN
BLU
LEFT
UP
RIGHT
DOWN
NEG/POS
COLOR
MEMORY
ERASER SIZE
ERASER ON
ON
Vcc
TEST
REF HD
RESET
A10
GRN
RED
WHT
BLK
CYAN
MAG
YEL
R447 47K
R448 100K
IC407 HM62256LFP-15SLT MEMORY
R405 10K
R404 220K
R407 68K
C401 .001
Q404 2SC2462D(LD) RESET
D405 MA152WK(MU)
D406 MA152WK(MU)
D407 MA152WK(MU)
D408 MA152WK (MU)
R446 33K
R456 120K
R441 15K
R440 5.6K
R442 27K
R457 330K
R443 47K
R444 82K
R445 220K
R449 100K
PG404
TITL ON
TITL CORRECT
SET/ERASE
BACK-UP
GND
FADE
To SYS.CON. PG809
D410 RB110
R450 1K
D409 MA151K(MH)
BACK-UP BATT CR2025
SW403 FADE SW
TITLER P.C.B

NOTE: • MARK "■" IS DISCRETE COMPONENT.
• ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
(FOR EXAMPLE, READ R123 IS R1123 IN PARTS LIST.)

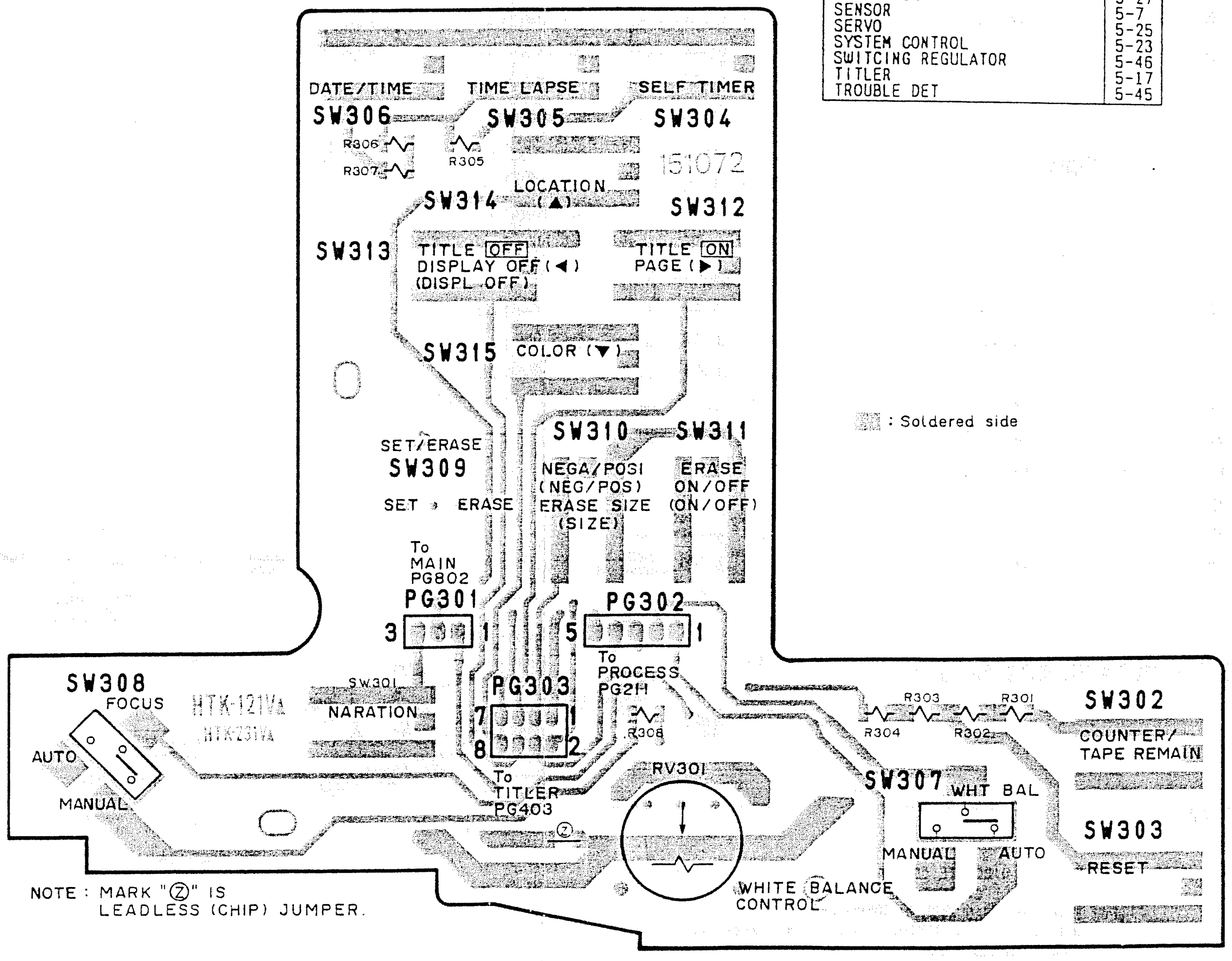
CONTROL SCHEMATIC


PG301
CAMERA CONT
GND
NAR. CONT.
To SYS CON. PG802
R301 1K
R302 220
R303 1.5K
R304 150
R305 1.8K
R306 2.2K
R307 390
SW301 NARATION
SW302 COUNTER /TAPE REMAIN
SW303 RESET
SW304 SELF TIMER
SW305 TIME LAPSE
SW306 DATE/TIME
PG303
5VI
SET/ERASE
NEG/POS,SIZE
ON/OFF
TITLE,PAGE
TITLE,DISP OFF
LOCATION
COLOR NEG/POS
To TITLER PG403
SW309 SET/ERASE
SW310 NEGA/POSI, ERASE SIZE (NEG/POS) (SIZE)
SW311 ERASE ON/OFF (ON/OFF)
SW312 TITLE ON, PAGE(▶)
SW313 TITLE OFF, DISPLAY OFF(◀) (DISPL OFF)
SW314 LOCATION(▲)
SW315 COLOUR(▼)
SW307 WHITE BAL
MANUAL
AUTO
PG302
AUTO WHT BAL
WHT BAL CONT
SW308 FOCUS
FOCUS AUTO
C5V
5VI
R308 5.6K
RV301 10K-B WHITE BALANCE CONTROL
To ENCODER PG211
CONTROL P.C.B

NOTE: • MARK "■" IS DISCRETE COMPONENT.
• ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
(FOR EXAMPLE, READ R123 IS R1123 IN PARTS LIST.)

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

CONTROL CIRCUIT BOARD

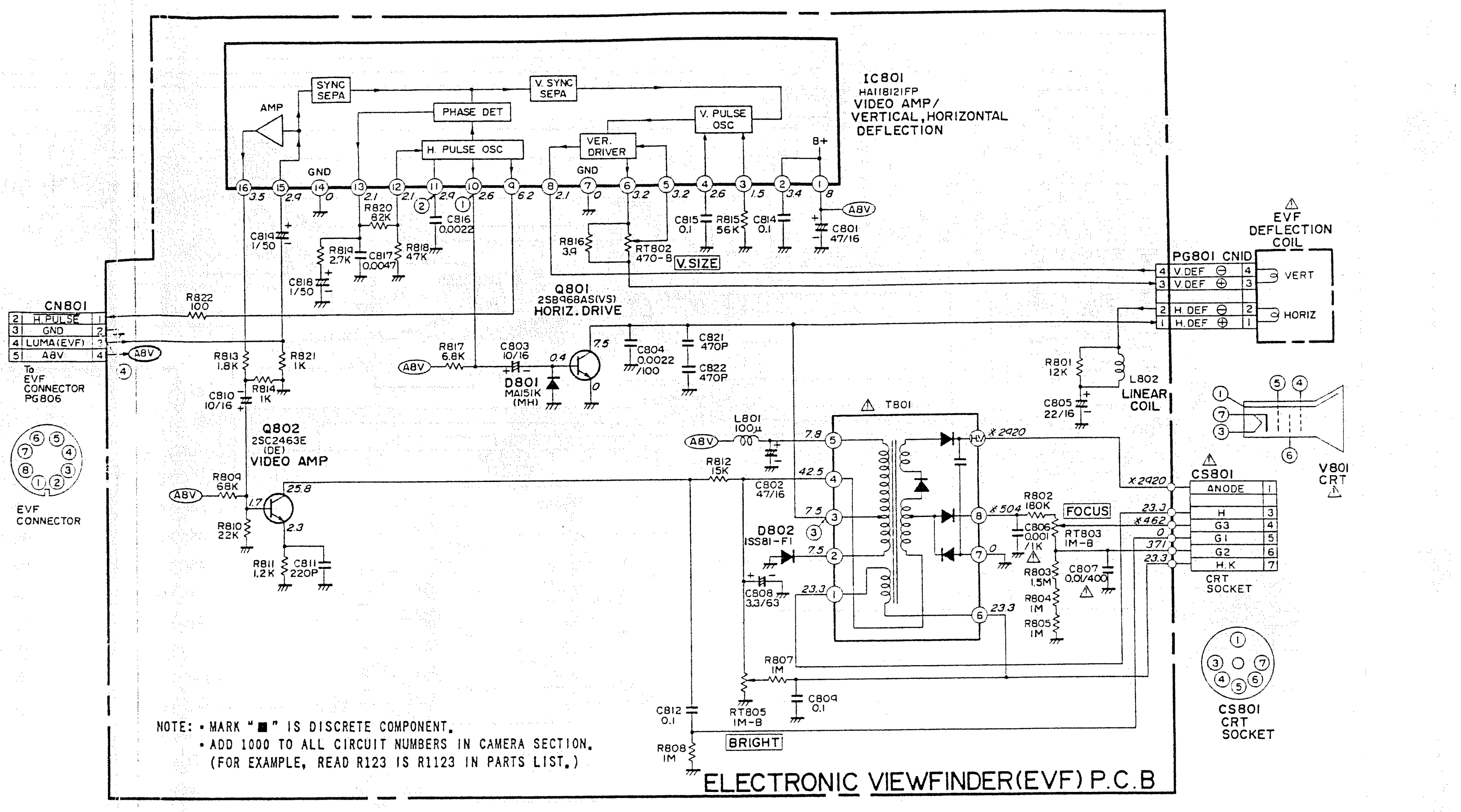

DATE/TIME
TIME LAPSE
SELF TIMER
SW306
SW305
SW304
R306
R307
R305
151072
LOCATION (▲)
SW314
SW312
SW313
TITLE OFF DISPLAY OFF(◀) (DISPL OFF)
TITLE ON PAGE(▶)
SW315
COLOR (▼)
SET/ERASE SW309
SET ERASE
SW310
SW311
NEGA/POSI (NEG/POS) ERASE SIZE (SIZE)
ERASE ON/OFF (ON/OFF)
To MAIN PG802
PG301
PG302
To PROCESS PG211
PG303
To TITLER PG403
SW308 FOCUS
AUTO
MANUAL
HTK-121VA
SW301 NARATION
RV301
R308
R303
R301
R304
R302
SW302 COUNTER/ TAPE REMAIN
SW303 RESET
SW307 WHT BAL
MANUAL
AUTO
WHITE BALANCE CONTROL

▨ : Soldered side

NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

CONTROL P.C.B
(COMPONENT SIDE)

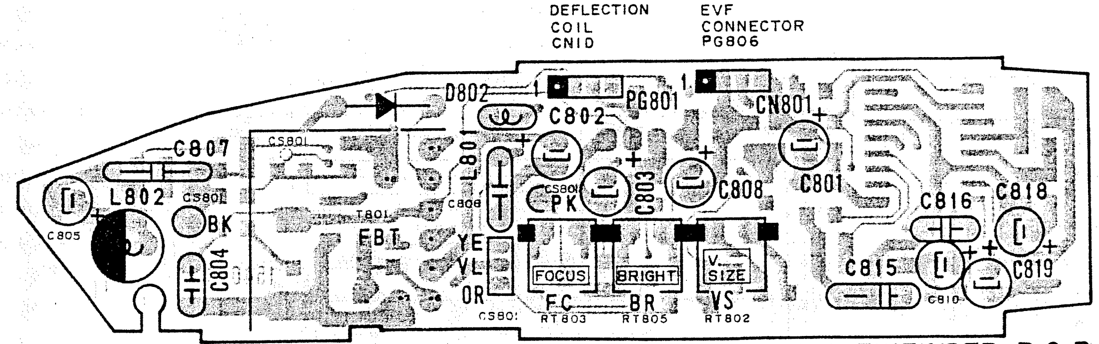
ELECTRONIC VIEWFINDER(EVF) SCHEMATIC


IC801
HA11812IFP
VIDEO AMP/ VERTICAL, HORIZONTAL DEFLECTION
SYNC SEPA
V. SYNC SEPA
PHASE DET
V. PULSE OSC
H PULSE OSC
VER. DRIVER
AMP
GND
8+
A8V
CN801
H. PULSE
GND
LUMA(EVF)
A8V
To EVF CONNECTOR PG806
EVF CONNECTOR
Q801 2SB468A(VS) HORIZ. DRIVE
Q802 2SC2463E (DE) VIDEO AMP
D801 MA151K (MH)
D802 ISS81-F1
L801 100μ
L802 LINEAR COIL
T801
RT802 470-B V.SIZE
RT803 1M-B FOCUS
RT805 1M-B BRIGHT
PG801 CN1D
V.DEF ⊖
V.DEF ⊕
H.DEF ⊖
H.DEF ⊕
EVF DEFLECTION COIL
VERT
HORIZ
CS801
ANODE
H
G3
G1
G2
H.K
CRT SOCKET
V801 CRT
CS801 CRT SOCKET
ELECTRONIC VIEWFINDER(EVF) P.C.B

NOTE: • MARK "■" IS DISCRETE COMPONENT.
• ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
(FOR EXAMPLE, READ R123 IS R1123 IN PARTS LIST.)

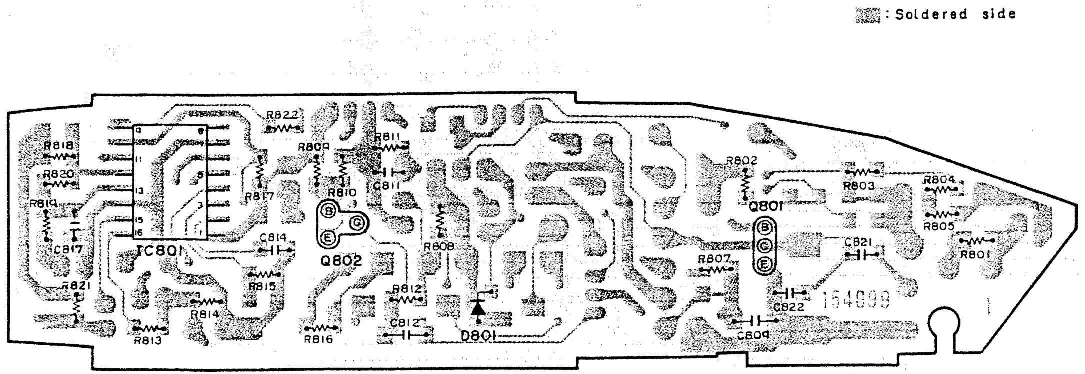
ELECTRONIC VIEWFINDER(EVF) CIRCUIT BOARD

▨ : Soldered side


To DEFLECTION COIL CNID
To EVF CONNECTOR PG806
D802
C802
PG801
CN801
C807
CS801
L801
L802
C805
C806
PK
C803
C808
C801
C816
C818
BK
T801
FBT
YE
YL
OR
C804
FOCUS
BRIGHT
V. SIZE
FC
BR
VS
RT803
RT805
RT802
C815
C819
C810

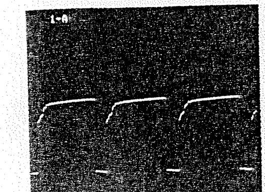
ELECTRONIC VIEWFINDER P.C.B
(COMPONENT SIDE)

▨ : Soldered side

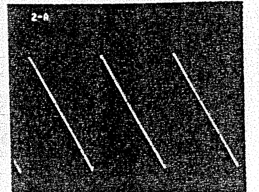

R822
R818
R820
R819
R817
R809
R811
R810
C811
IC801
C814
Q802
R821
R815
R813
R814
R816
R812
D801
Q801
R807
C821
C822
R802
R803
R804
R805
R801
154099

ELECTRONIC VIEWFINDER P.C.B
(SOLDER SIDE)

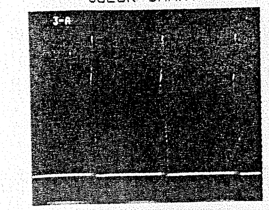
1-A IC801-10 1.7Vp-p
0.5V/20.0μ sec.cm
COLOR CHART



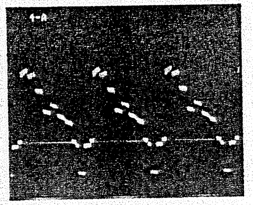
2-A IC801-11 1.0Vp-p
0.2V/20.0μ sec.cm
COLOR CHART



3-A T801-3 120Vp-p
20V/20.0μ sec.cm
COLOR CHART



4-A CN801-3 930mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
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PROCESS	5-11
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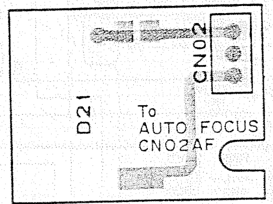
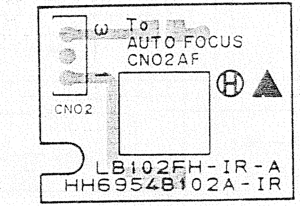
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

LED CIRCUIT BOARD


CN02
D21
To
AUTO FOCUS
CN02AF

LED P.C.B
(COMPONENT SIDE)

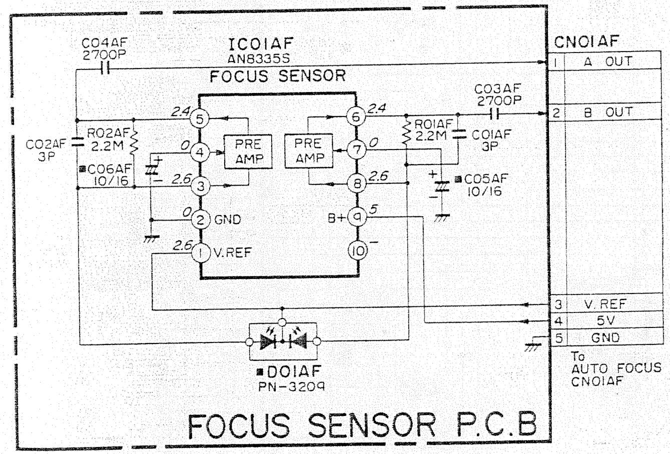
▨ : Soldered side
▨ : Parts side


To
AUTO FOCUS
CN02AF
CN02
LB102FH-IR-A
HH6954B102A-IR

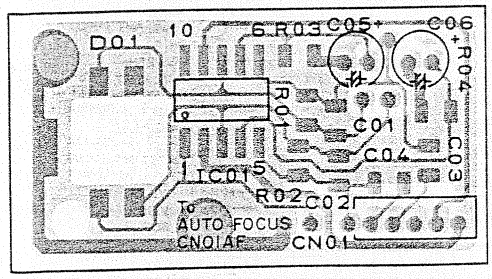
LED P.C.B
(SOLDER SIDE)

▨ : Soldered side

FOCUS SENSOR SCHEMATIC

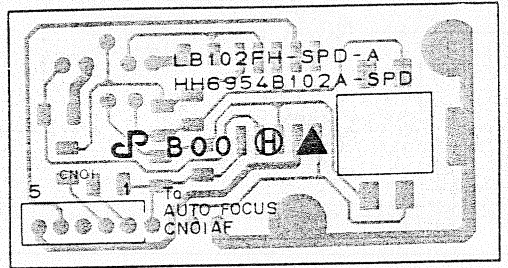

C04AF
2700P
IC01AF
AN8335S
FOCUS SENSOR
CN01AF
1 A OUT
2 B OUT
3 V.REF
4 5V
5 GND
C03AF
2700P
R01AF
2.2M
C01AF
3P
C02AF
3P
R02AF
2.2M
C06AF
10/16
C05AF
10/16
PRE AMP
PRE AMP
GND
V.REF
B+
D01AF
PN-3209
To
AUTO FOCUS
CN01AF
FOCUS SENSOR P.C.B

FOCUS SENSOR CIRCUIT BOARD


D01
10
6
R03
C05
C06
R04
R01
C01
C04
C03
1
IC01
5
R02
C02
To
AUTO FOCUS
CN01AF
CN01

FOCUS SENSOR P.C.B
(COMPONENT SIDE)

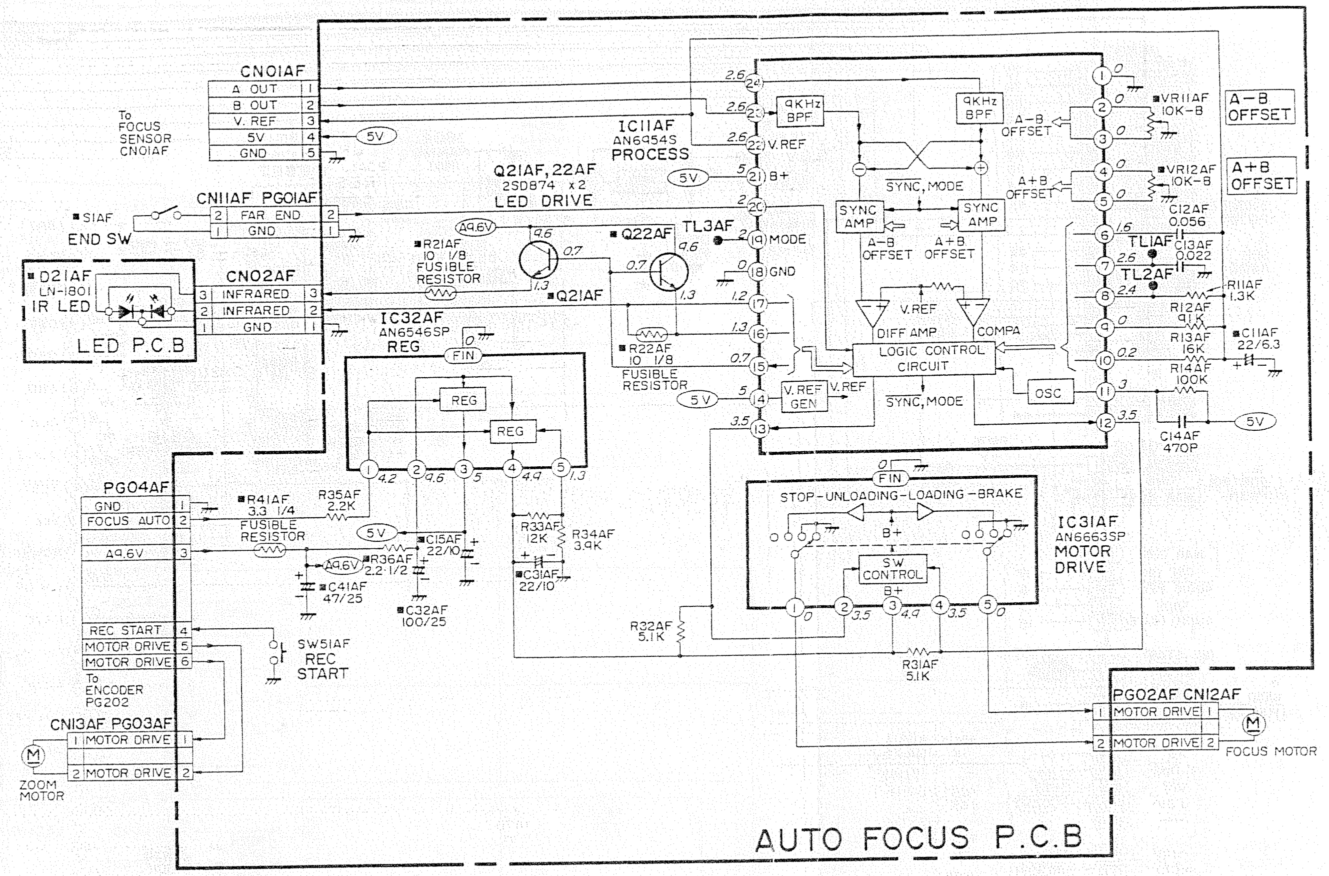
▨ : Soldered side
▨ : Parts side


LB102FH-SPD-A
HH6954B102A-SPD
B00
CN01
5
To
AUTO FOCUS
CN01AF

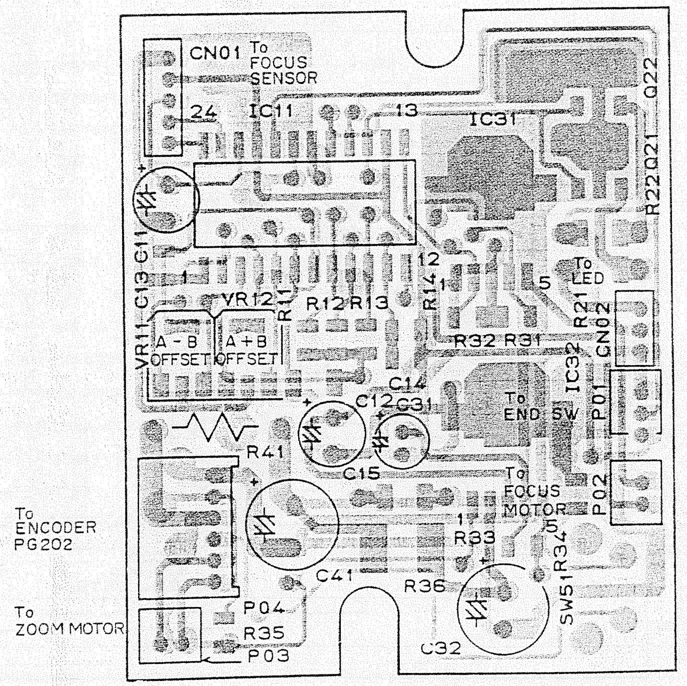
FOCUS SENSOR P.C.B
(SOLDER SIDE)

▨ : Soldered side

AUTO FOCUS-LED SCHEMATIC

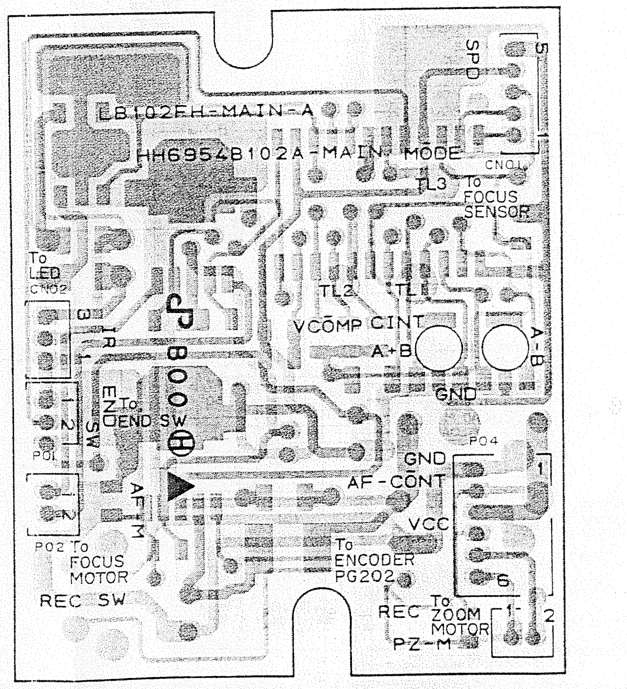

CN01AF
A OUT
B OUT
V.REF
5V
GND
To
FOCUS
SENSOR
CN01AF
IC11AF
AN6954S
PROCESS
Q21AF,22AF
2SD874 x2
LED DRIVE
S1AF
END SW
CN11AF PG01AF
FAR END
GND
D21AF
LN-1801
IR LED
LED P.C.B
CN02AF
INFRARED
INFRARED
GND
R21AF
10 1/8
FUSIBLE
RESISTOR
Q22AF
Q21AF
TL3AF
R22AF
10 1/8
FUSIBLE
RESISTOR
IC32AF
AN6546SP
REG
FIN
REG
REG
PG04AF
GND
FOCUS AUTO
A9.6V
REC START
MOTOR DRIVE
MOTOR DRIVE
To
ENCODER
PG202
R41AF
3.3 1/4
FUSIBLE
RESISTOR
R35AF
2.2K
C15AF
22/10
R36AF
2.2 1/2
C41AF
47/25
C32AF
100/25
R33AF
12K
R34AF
3.9K
C31AF
22/10
SW51AF
REC
START
CN13AF PG03AF
MOTOR DRIVE
MOTOR DRIVE
ZOOM
MOTOR
R32AF
5.1K
9KHz
BPF
9KHz
BPF
V.REF
B+
MODE
GND
SYNC, MODE
SYNC
AMP
SYNC
AMP
A−B
OFFSET
A+B
OFFSET
V.REF
DIFF AMP
COMPA
LOGIC CONTROL
CIRCUIT
V.REF
GEN
SYNC, MODE
OSC
VR11AF
10K-B
VR12AF
10K-B
A−B
OFFSET
A+B
OFFSET
C12AF
0.056
TL1AF
C13AF
0.022
TL2AF
R11AF
1.3K
R12AF
91K
R13AF
16K
R14AF
100K
C11AF
22/6.3
C14AF
470P
5V
STOP-UNLOADING-LOADING-BRAKE
B+
SW
CONTROL
B+
IC31AF
AN6663SP
MOTOR
DRIVE
R31AF
5.1K
PG02AF CN12AF
MOTOR DRIVE
MOTOR DRIVE
FOCUS MOTOR
AUTO FOCUS P.C.B

AUTO FOCUS CIRCUIT BOARD


CN01
To
FOCUS
SENSOR
24
IC11
13
IC31
Q22
Q21
R22
12
1
VR12
R11
R12
R13
R14
VR11
C13
C11
A−B
OFFSET
A+B
OFFSET
R32
R31
5
To
LED
R21
CN02
IC32
C14
C12
C31
To
END SW
P01
R41
C15
To
FOCUS
MOTOR
P02
R33
R34
SW51
C41
R36
P04
R35
P03
C32
To
ENCODER
PG202
To
ZOOM MOTOR

AUTO FOCUS P.C.B
(COMPONENT SIDE)

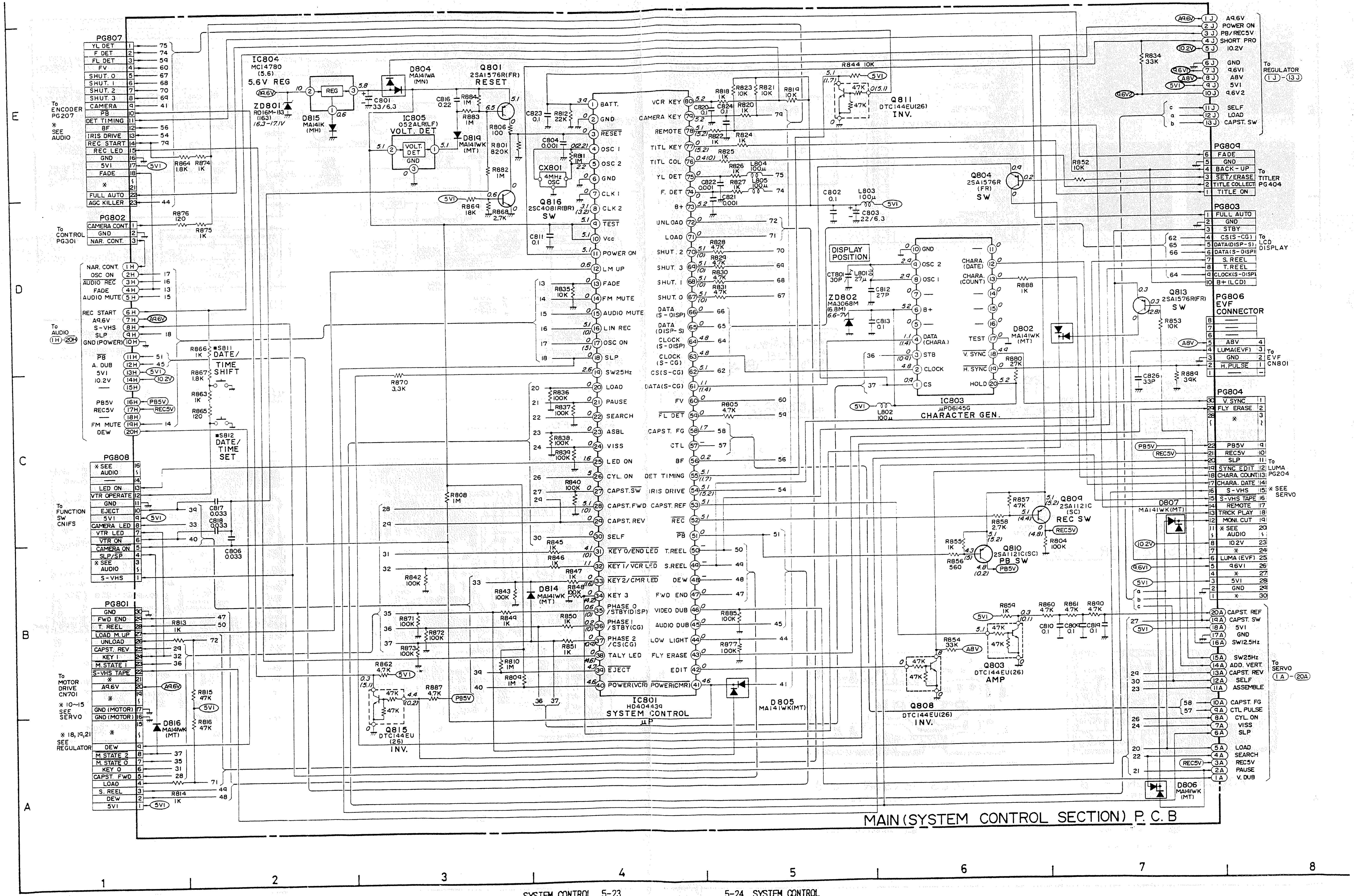
▨ : Soldered side
▨ : Parts side


LB102FH-MAIN-A
HH6954B102A-MAIN
MODE
CN01
TL3
To
FOCUS
SENSOR
To
LED
CN02
TL2
TL1
VCOMP
CINT
A+B
A−B
GND
B00
To
END SW
AFM
GND
P04
AF-CONT
VCC
P02
To
FOCUS
MOTOR
REC SW
To
ENCODER
PG202
REC
To
ZOOM
MOTOR
PZ-M
SPD

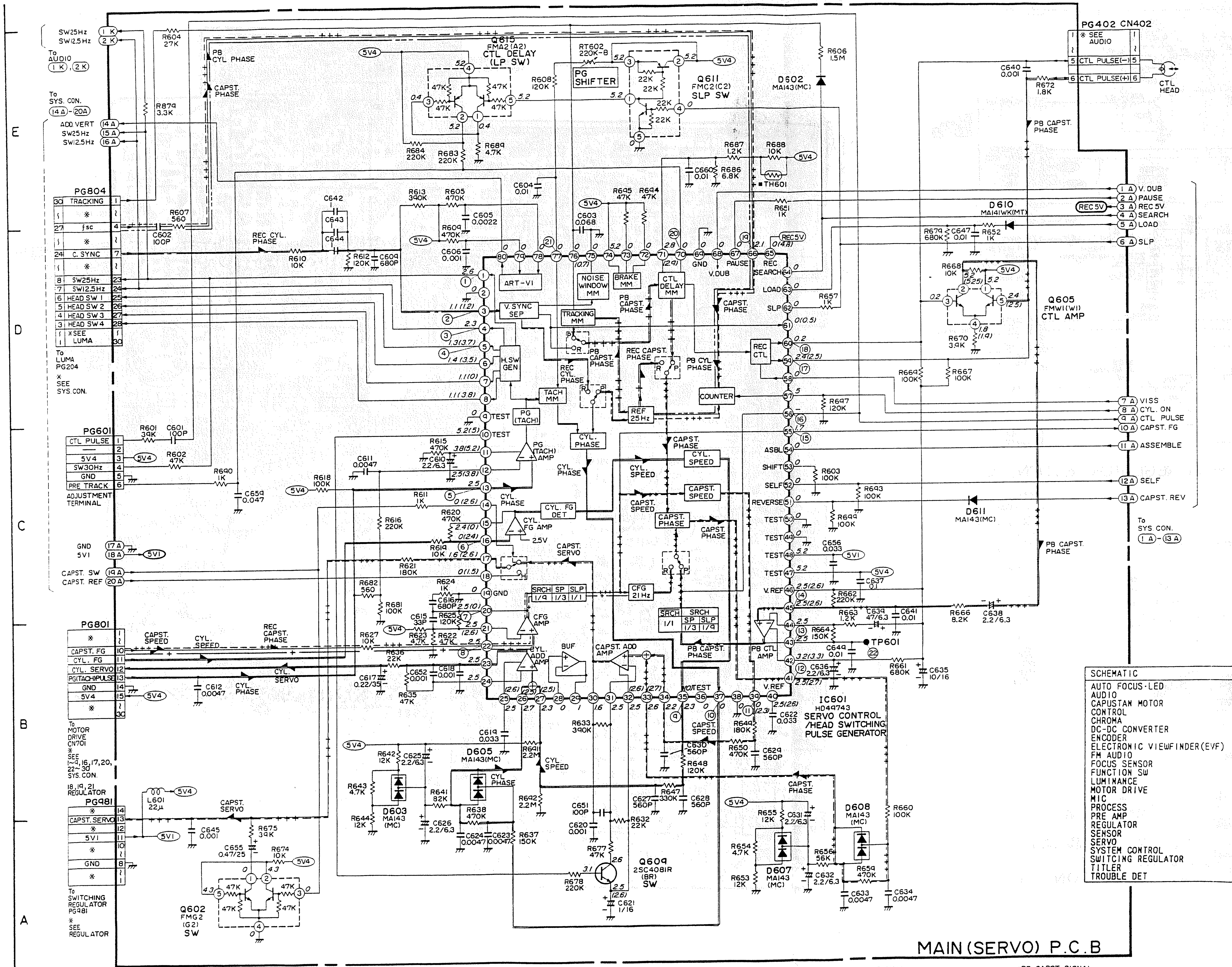
AUTO FOCUS P.C.B
(SOLDER SIDE)

▨ : Soldered side
▨ : Parts side

MAIN (SYSTEM CONTROL SECTION) SCHEMATIC


PG807
YL DET
F DET
FL DET
FV
SHUT. 0
SHUT. 1
SHUT. 2
SHUT. 3
CAMERA
PB
DET TIMING
BF
IRIS DRIVE
REC START
REC LED
GND
5V1
FADE
FULL AUTO
AGC KILLER
To ENCODER PG207
※ SEE AUDIO
PG802
CAMERA CONT.
GND
NAR. CONT.
To CONTROL PG301
NAR. CONT.
OSC ON
AUDIO REC
FADE
AUDIO MUTE
REC START
A9.6V
S-VHS
SLP
GND (POWER)
PB
A. DUB
5V1
10.2V
PB5V
REC5V
FM MUTE
DEW
To AUDIO (1H)-(20H)
S811 DATE/TIME SHIFT
S812 DATE/TIME SET
PG808
LED ON
VTR OPERATE
GND
EJECT
5V1
CAMERA LED
VTR LED
VTR ON
CAMERA ON
SLP/SP
S-VHS
To FUNCTION SW CN1FS
PG801
GND
FWD END
T. REEL
LOAD M. UP
UNLOAD
CAPST. REV
KEY 1
M. STATE 1
S-VHS TAPE
A9.6V
GND (MOTOR)
DEW
M. STATE 2
M. STATE 0
KEY 0
CAPST. FWD
LOAD
S. REEL
To MOTOR DRIVE CN701
※ 10~15 SEE SERVO
※ 18, 19, 21 SEE REGULATOR
IC804 MC14780 (5.6) 5.6V REG
ZD801 RD16M-B3 (16.3) 16.3-17.1V
D815 MA141K (MH)
D804 MA141WA (MN)
IC805 052ALR(LF) VOLT. DET
D819 MA141WK (MT)
Q801 2SA1576R(FR) RESET
CX801 4MHz OSC
Q816 2SC4081R(BR) SW
IC801 HD404439 SYSTEM CONTROL µP
BATT.
GND
RESET
OSC 1
OSC 2
CLK 1
CLK 2
TEST
Vcc
POWER ON
LM UP
FADE
FM MUTE
AUDIO MUTE
LIN REC
OSC ON
SLP
SW25Hz
LOAD
PAUSE
SEARCH
ASBL
VISS
LED ON
CYL. ON
CAPST. SW
CAPST. FWD
CAPST. REV
SELF
KEY 0/END LED
KEY 1/VCR LED
KEY 2/CMR LED
KEY 3
PHASE 0 /STBY(DISP)
PHASE 1 /STBY(CG)
PHASE 2 /CS(CG)
TALY LED
EJECT
POWER(VCR)
VCR KEY
CAMERA KEY
REMOTE
TITL KEY
TITL COL
YL DET
F. DET
8+
UNLOAD
LOAD
SHUT. 2
SHUT. 3
SHUT. 1
SHUT. 0
DATA (S-DISP)
DATA (DISP-S)
CLOCK (S-DISP)
CLOCK (S-CG)
CS(S-CG)
DATA(S-CG)
FV
FL DET
CAPST. FG
CTL
BF
DET TIMING
IRIS DRIVE
CAPST. REF
REC
PB
T. REEL
S. REEL
DEW
FWD END
VIDEO DUB
AUDIO DUB
LOW LIGHT
FLY ERASE
EDIT
POWER(CMR)
D814 MA141WK (MT)
D816 MA141WK (MT)
Q815 DTC144EU (26) INV.
D805 MA141WK(MT)
Q811 DTC144EU(26) INV.
Q804 2SA1576R (FR) SW
DISPLAY POSITION
ZD802 MA3068M (6.8M) 6.6-7V
IC803 µPD6145G CHARACTER GEN.
CHARA. (DATE)
CHARA. (COUNT)
DATA (CHARA)
STB
CLOCK
CS
TEST
V. SYNC
H. SYNC
HOLD
D802 MA141WK (MT)
Q813 2SA1576R(FR) SW
Q809 2SA1121C (SC) REC SW
Q810 2SA1121C(SC) PB SW
Q803 DTC144EU(26) AMP
Q808 DTC144EU(26) INV.
D807 MA141WK(MT)
D806 MA141WK (MT)
A9.6V
POWER ON
PB/REC5V
SHORT PRO
10.2V
GND
9.6V1
A8V
5V1
9.6V2
SELF
LOAD
CAPST. SW
To REGULATOR (1J)-(13J)
PG809
FADE
GND
BACK-UP
SET/ERASE
TITLE COLLECT
TITLE ON
To TITLER PG404
PG803
FULL AUTO
GND
STBY
CS(S-CG)
DATA(DISP-S)
DATA(S-DISP)
S. REEL
T. REEL
CLOCK(S-DISP)
B+ (LCD)
To LCD DISPLAY
PG806 EVF CONNECTOR
A8V
LUMA(EVF)
GND
H. PULSE
To EVF CN801
PG804
V. SYNC
FLY ERASE
PB5V
REC5V
SLP
SYNC EDIT
CHARA. COUNT
CHARA. DATE
S-VHS
S-VHS TAPE
REMOTE
TRICK PLAY
MONI. CUT
※ SEE AUDIO
10.2V
LUMA (EVF)
9.6V1
5V1
GND
To LUMA PG204
※ SEE SERVO
CAPST. REF
CAPST. SW
5V1
GND
SW12.5Hz
SW25Hz
ADD. VERT.
CAPST. REV
SELF
ASSEMBLE
CAPST. FG
CTL PULSE
CYL. ON
VISS
SLP
LOAD
SEARCH
REC5V
PAUSE
V. DUB
To SERVO (1A)-(20A)
MAIN (SYSTEM CONTROL SECTION) P. C. B
1
2
3
4
5
6
7
8
A
B
C
D
E

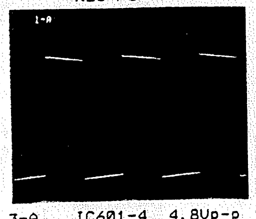
MAIN (SERVO SECTION) SCHEMATIC


IC601 H049743 SERVO CONTROL /HEAD SWITCHING PULSE GENERATOR
Q615 FMA2(A2) CTL DELAY (LP SW)
Q611 FMC2(C2) SLP SW
Q605 FMW1(W1) CTL AMP
Q602 FMG2 (G2) SW
Q609 2SC4081R (BR) SW
D502 MA143(MC)
D610 MA141WK(MT)
D611 MA143(MC)
D603 MA143 (MC)
D605 MA143(MC)
D607 MA143 (MC)
D608 MA143 (MC)
PG402 CN402
CTL PULSE(−)
CTL PULSE(+)
CTL HEAD
PG804
TRACKING
fsc
C. SYNC
SW25Hz
SW12.5Hz
HEAD SW 1
HEAD SW 2
HEAD SW 3
HEAD SW 4
LUMA
PG601
CTL PULSE
5V4
SW30Hz
GND
PRE TRACK
ADJUSTMENT TERMINAL
PG801
CAPST. FG
CYL. FG
CYL. SERVO
PG(TACH)PULSE
PG981
CAPST. SERVO
5V1
To MOTOR DRIVE CN701
To SWITCHING REGULATOR PG981
To SYS. CON. (1A)-(13A)
V. DUB
PAUSE
REC 5V
SEARCH
LOAD
SLP
VISS
CYL. ON
CTL PULSE
CAPST. FG
ASSEMBLE
SELF
CAPST. REV
CAPST. SW
CAPST. REF
ART-V1
V.SYNC SEP
H.SW GEN
TRACKING MM
NOISE WINDOW MM
BRAKE MM
CTL DELAY MM
PG SHIFTER
REC CTL
COUNTER
REF 25Hz
TACH MM
PG (TACH)
CYL. PHASE
CYL. SPEED
CAPST. SPEED
CAPST. PHASE
CYL. FG DET
CFG 21Hz
CFG AMP
BUF
CAPST. ADD AMP
PB CTL AMP
TP601
MAIN(SERVO) P.C.B

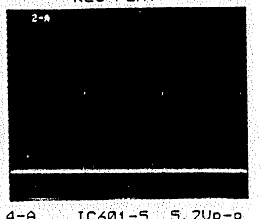
——— — — ———:REC CYL SIGNAL ———————:REC/PB CYL SIGNAL ——— + ———:REC CAPST SIGNAL — — + + + — —:REC/PB CAPST SIGNAL ——— — — — —:PB CYL SIGNAL ——— + + + ———:PB CAPST SIGNAL

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

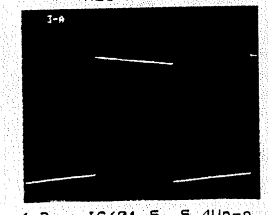
1-A IC601-1 5.0Vp-p
1V/10.0msec.cm
REC/PLAY



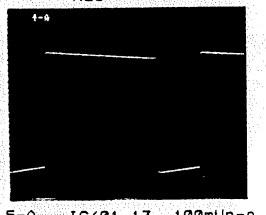
2-A IC601-3 3.5Vp-p
1V/5.0msec.cm
REC/PLAY



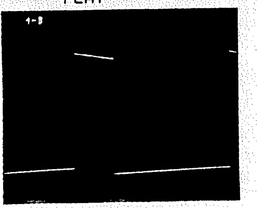
3-A IC601-4 4.8Vp-p
1V/10.0msec.cm
REC/PLAY



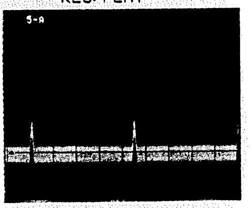
4-A IC601-5 5.2Vp-p
1V/10.0msec.cm
REC



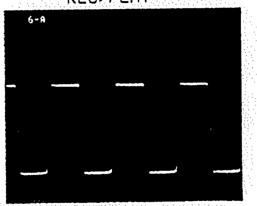
4-B IC601-5 5.4Vp-p
1V/10.0msec.cm
PLAY



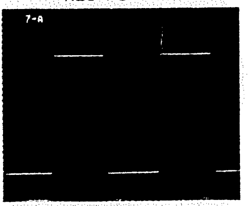
5-A IC601-13 100mVp-p
50mV/5.0msec.cm
REC/PLAY



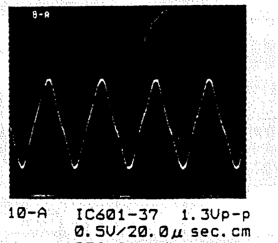
6-A IC601-16 4.0Vp-p
1V/500μ sec.cm
REC/PLAY



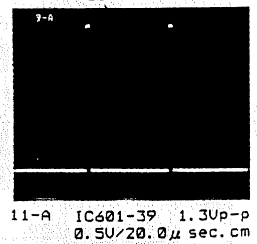
7-A IC601-20 5.2Vp-p
1V/100μ sec.cm
REC/PLAY



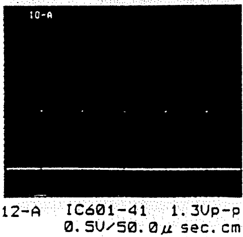
8-A IC601-22 2.0Vp-p
0.5V/200μ sec.cm
REC/PLAY



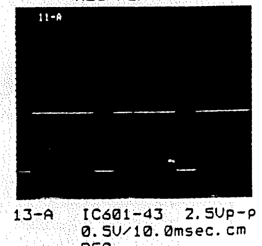
9-A IC601-35 1.3Vp-p
0.2V/20.0μ sec.cm
REC/PLAY



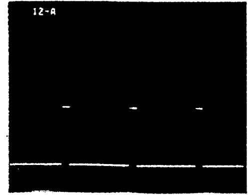
10-A IC601-37 1.3Vp-p
0.5V/20.0μ sec.cm
REC/PLAY



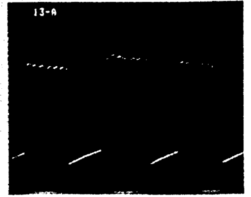
11-A IC601-39 1.3Vp-p
0.5V/20.0μ sec.cm
REC/PLAY



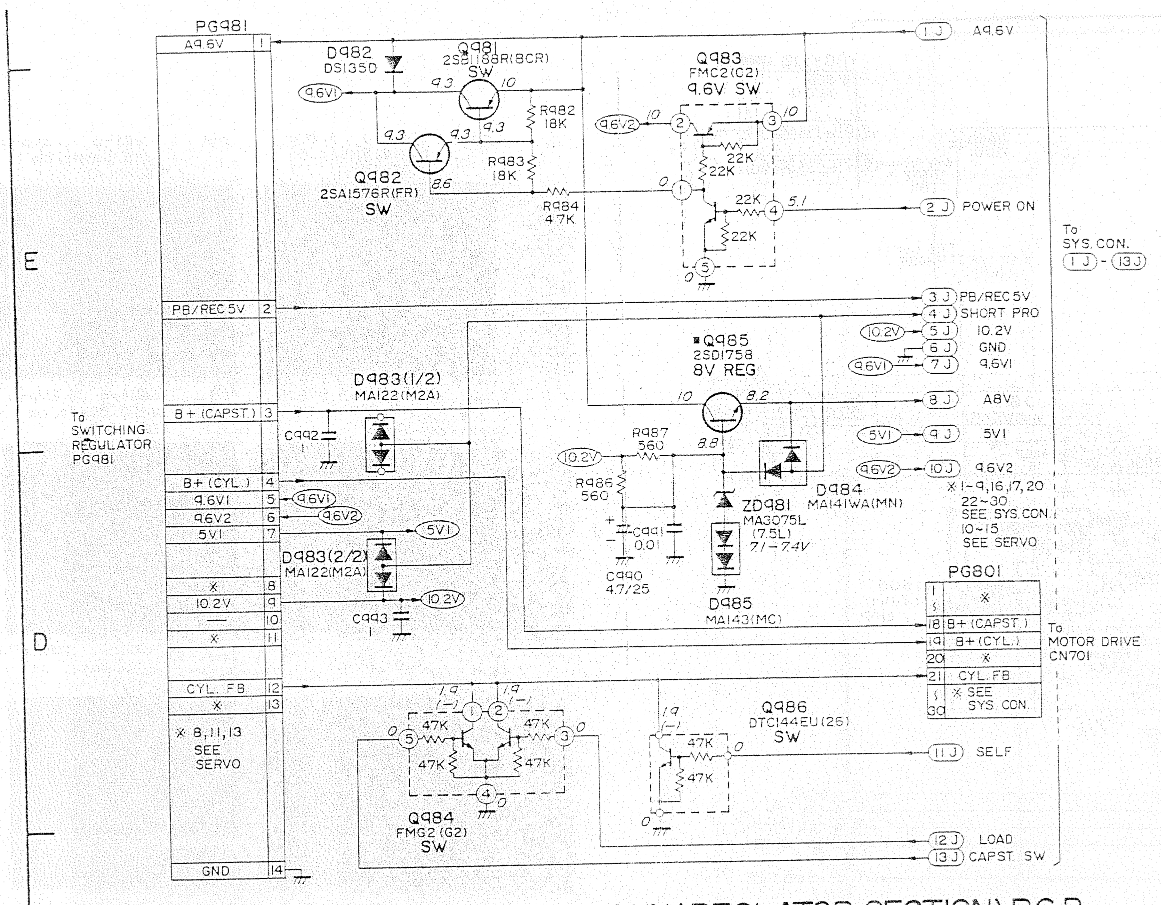
12-A IC601-41 1.3Vp-p
0.5V/50.0μ sec.cm
REC/PLAY



13-A IC601-43 2.5Vp-p
0.5V/10.0msec.cm
REC



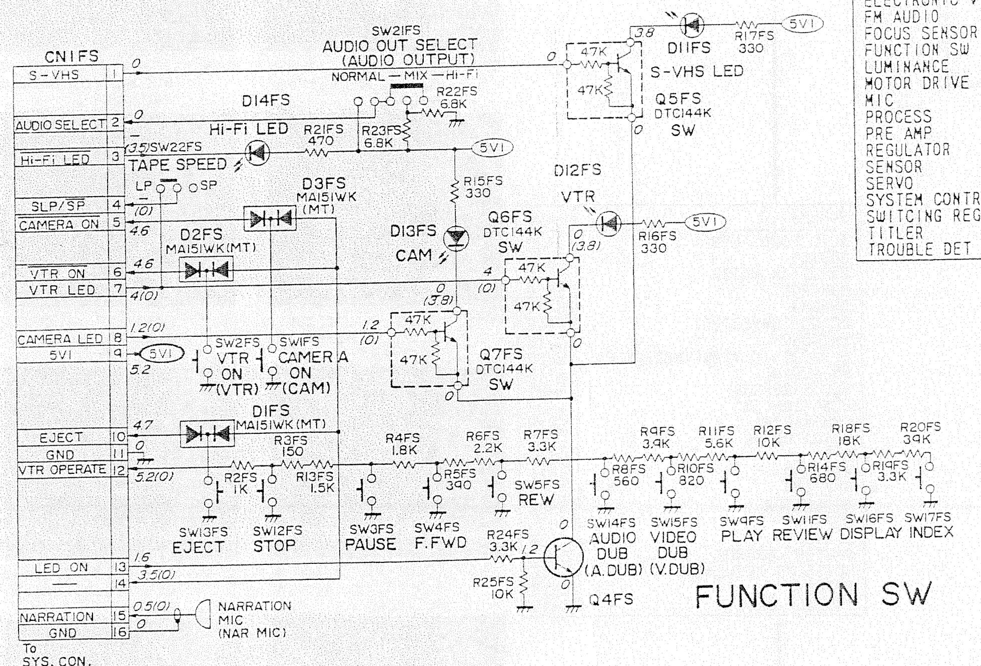
MAIN (REGULATOR SECTION) SCHEMATIC


PG981
A9.6V
D982
DS135D
Q981
2SB1188R(BCR)
SW
Q983
FMC2(C2)
9.6V SW
R982
18K
R983
18K
Q982
2SA1576R(FR)
SW
R984
4.7K
22K
A9.6V
POWER ON
PB/REC 5V
SHORT PRO
10.2V
GND
9.6V1
A8V
5V1
9.6V2
To SYS. CON.
Q985
2SD1758
8V REG
R987
560
R986
560
C991
0.01
C990
47/25
ZD981
MA3075L
(7.5L)
D984
MA141WA(MN)
D985
MA143(MC)
X 1-9,16,17,20
22~30
SEE SYS.CON.
10-15
SEE SERVO
To SWITCHING REGULATOR PG981
PB/REC 5V
B+ (CAPST.)
C992
D983(1/2)
MA122(M2A)
B+ (CYL.)
9.6V1
9.6V2
5V1
D983(2/2)
MA122(M2A)
10.2V
C993
CYL. FB
X 8,11,13
SEE
SERVO
GND
PG801
B+ (CAPST.)
B+ (CYL.)
CYL. FB
X SEE SYS. CON.
To MOTOR DRIVE CN701
Q986
DTC144EU(26)
SW
47K
SELF
Q984
FMG2 (G2)
SW
LOAD
CAPST. SW

MAIN(REGLATOR SECTION) P.C.B

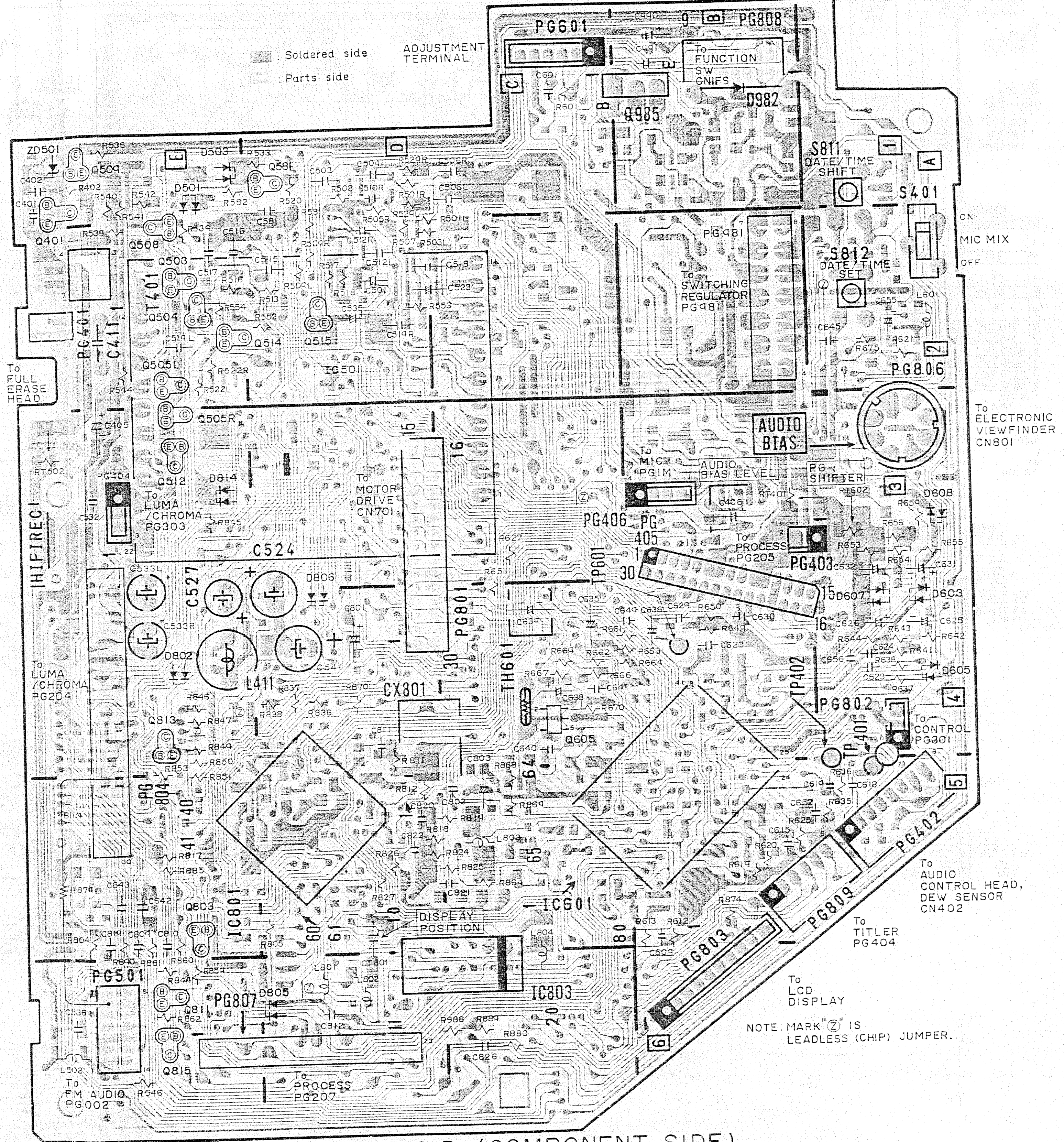
SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

FUNCTION SW SCHEMATIC (Reference)


CN1FS
S-VHS
AUDIO SELECT
Hi-Fi LED
SLP/SP
CAMERA ON
VTR ON
VTR LED
CAMERA LED
5V1
EJECT
GND
VTR OPERATE
LED ON
NARRATION
GND
To SYS. CON. PG808
SW21FS
AUDIO OUT SELECT
(AUDIO OUTPUT)
NORMAL — MIX — Hi-Fi
D11FS
S-VHS LED
R17FS
330
Q5FS
DTC144K
SW
D14FS
Hi-Fi LED
R21FS
470
R22FS
6.8K
R23FS
6.8K
SW22FS
TAPE SPEED
LP
SP
D3FS
MA151WK
(MT)
R15FS
330
D12FS
VTR
D2FS
MA151WK(MT)
D13FS
CAM
Q6FS
DTC144K
SW
R16FS
330
SW2FS
VTR ON (VTR)
SW1FS
CAMERA ON (CAM)
Q7FS
DTC144K
SW
D1FS
MA151WK(MT)
R3FS
150
R4FS
1.8K
R6FS
2.2K
R7FS
3.3K
R9FS
3.3K
R11FS
5.6K
R12FS
10K
R18FS
18K
R20FS
39K
R2FS
1K
R13FS
1.5K
R5FS
390
R8FS
560
R10FS
820
R14FS
680
R19FS
3.3K
SW13FS
EJECT
SW12FS
STOP
SW3FS
PAUSE
SW4FS
F.FWD
SW5FS
REW
SW14FS
AUDIO DUB (A.DUB)
SW15FS
VIDEO DUB (V.DUB)
SW9FS
PLAY
SW11FS
REVIEW
SW16FS
DISPLAY
SW17FS
INDEX
R24FS
3.3K
R25FS
10K
Q4FS
NARRATION MIC (NAR MIC)

FUNCTION SW

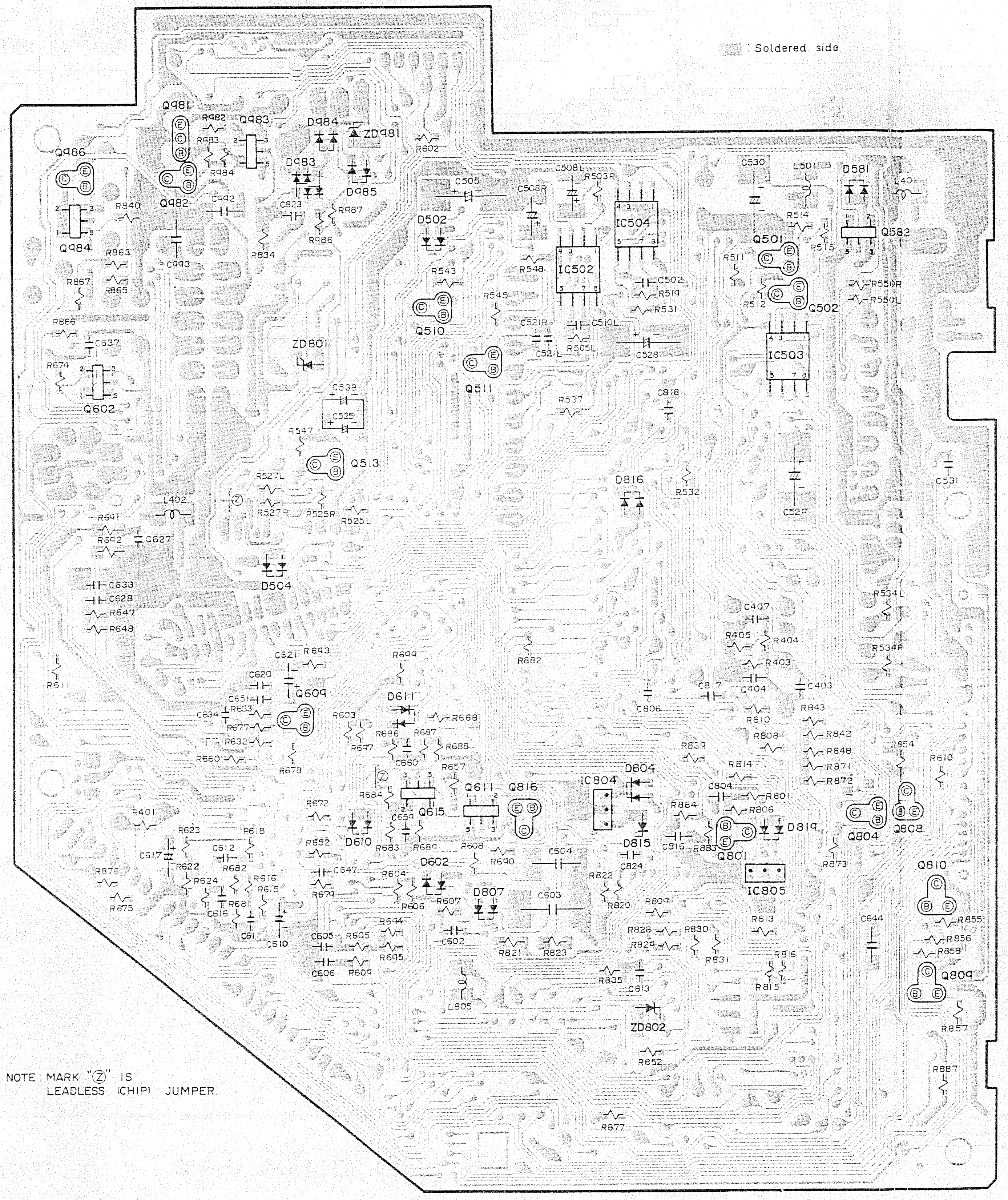
MAIN CIRCUIT BOARD — COMPONENT SIDE —


: Soldered side
: Parts side
ADJUSTMENT TERMINAL
PG601
PG808
To FUNCTION SW CN1FS
Q985
D982
S811
DATE/TIME SHIFT
S401
ON
MIC MIX
OFF
S812
DATE/TIME SET
To SWITCHING REGULATOR PG981
PG806
To ELECTRONIC VIEWFINDER CN801
AUDIO BIAS
To MIC PG1M
AUDIO BIAS LEVEL
PG SHIFTER
To PROCESS PG205
PG403
PG406
PG405
To FULL ERASE HEAD
HIFIREC
To LUMA /CHROMA PG303
To MOTOR DRIVE CN701
C524
C527
D806
PG801
IC501
L411
CX801
TH601
Q605
TP402
PG802
To CONTROL PG301
To LUMA /CHROMA PG204
IC801
IC601
DISPLAY POSITION
IC803
PG501
PG807
PG803
PG809
PG402
To AUDIO CONTROL HEAD, DEW SENSOR CN402
To TITLER PG404
To LCD DISPLAY
To FM AUDIO PG002
To PROCESS PG207

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

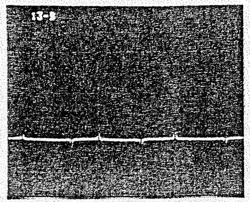
MAIN P.C.B (COMPONENT SIDE)

MAIN CIRCUIT BOARD —SOLDER SIDE—

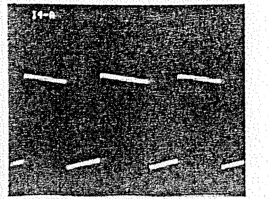

▨ : Soldered side
Q481
Q482
Q483
Q484
Q486
D483
D484
D485
ZD481
D502
D504
D581
Q501
Q502
Q510
Q511
Q513
Q582
IC502
IC503
IC504
ZD801
L401
L402
L501
C505
C508L
C508R
C530
C531
C529
C525
C538
C528
C818
R503R
R514
R515
R550R
R550L
R537
R532
R534L
R534R
D816
Q602
Q604
Q611
Q615
Q801
Q804
Q808
Q809
Q810
Q816
D602
D610
D611
D615
D807
D804
D819
IC804
IC805
ZD802
L805
C407
C403
C404
C817
C604
C603
C644
R401
R403
R404
R405
R611
R877
R887
R857
A
B
C
D
E
1
2
3
4
5
6
7
8

NOTE: MARK "Ⓩ" IS
LEADLESS (CHIP) JUMPER.

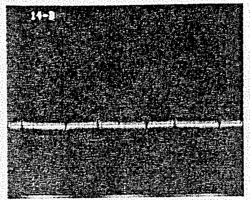
MAIN P.C.B (SOLDER SIDE)



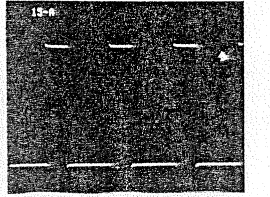
13-B IC601-43 3.8Vp-p
1V/10.0msec.cm
PLAY



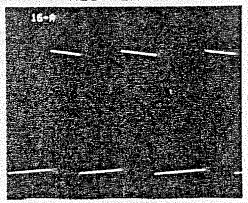
14-A IC601-45 850mVp-p
0.2V/10.0msec.cm
REC



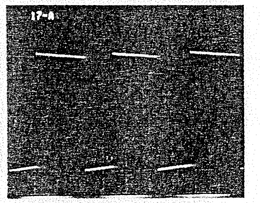
14-B IC601-45 200mVp-p
50mV/10.0msec.cm
PLAY



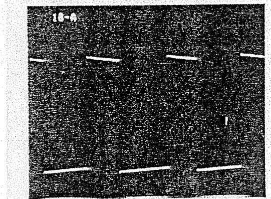
15-A IC601-55 5.3Vp-p
1V/500μ sec.cm
REC/PLAY



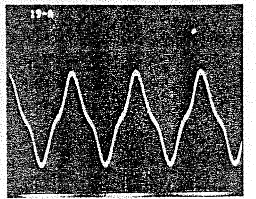
16-A IC601-56 5.3Vp-p
1V/10.0msec.cm
REC/PLAY



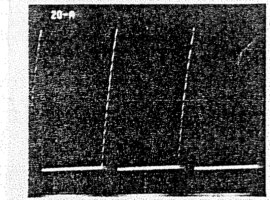
17-A IC601-59 5.1Vp-p
1V/10.0msec.cm
REC



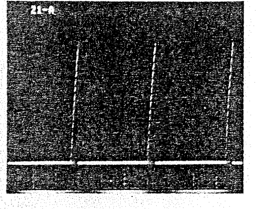
18-A IC601-60 5.1Vp-p
1V/10.0msec.cm
REC



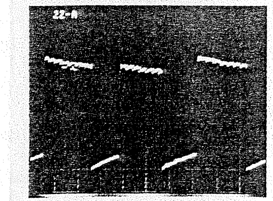
19-A IC601-66 420mVp-p
0.1V/100nsec.cm
REC/PLAY



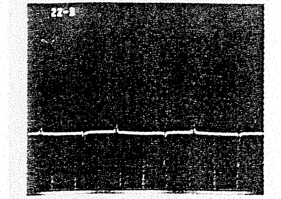
20-A IC601-70 3.1Vp-p
0.5V/10.0msec.cm
REC/PLAY



21-A IC601-77 2.7Vp-p
0.5V/5.0msec.cm
REC/PLAY

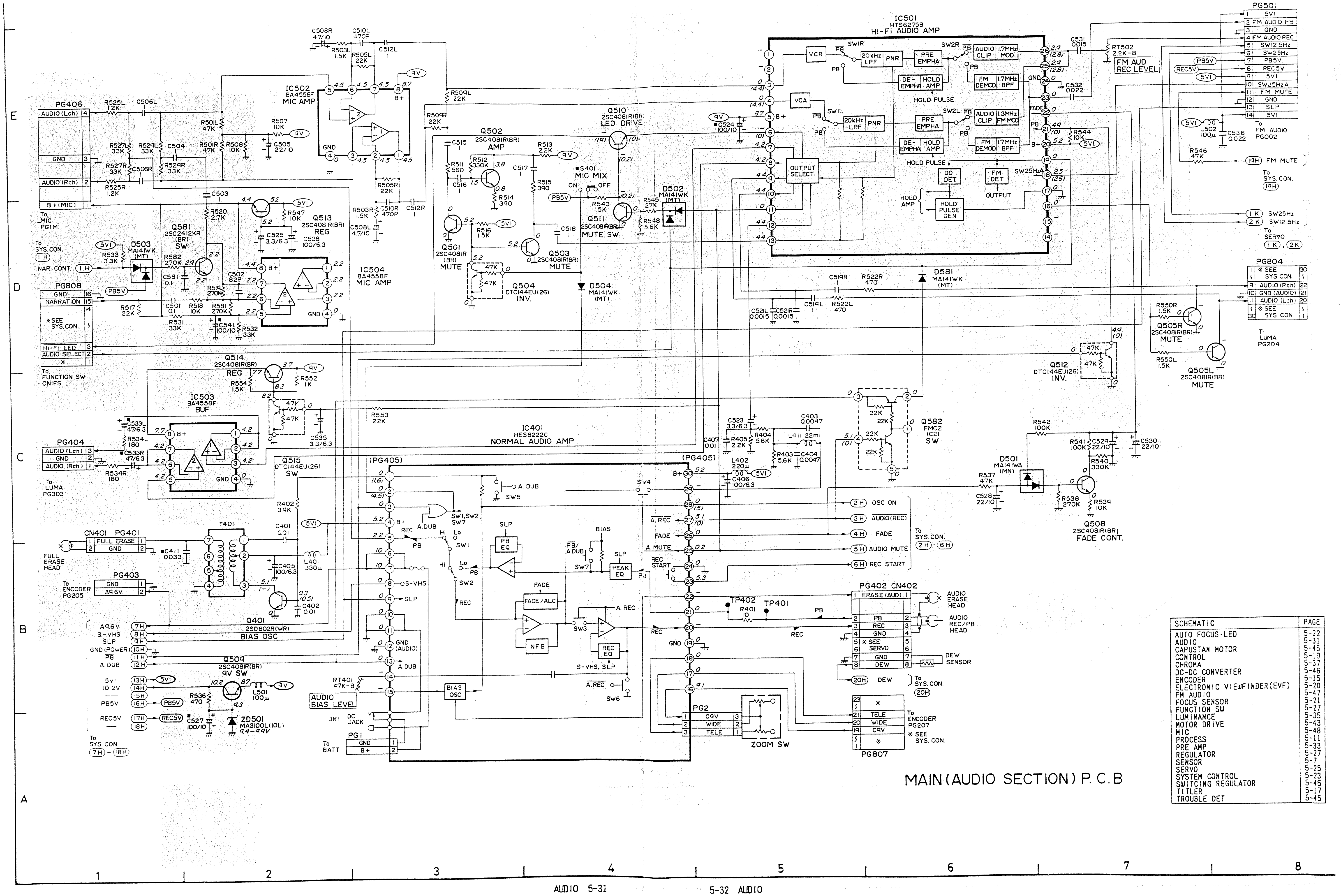


22-A TP601 2.5Vp-p
0.5V/10.0msec.cm
REC



22-B TP601 3.8Vp-p
1V/10.0msec.cm
PLAY

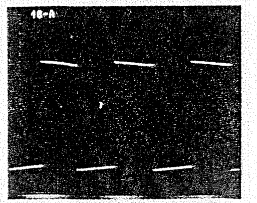
MAIN (AUDIO SECTION) SCHEMATIC


IC501 HTS6275B Hi-Fi AUDIO AMP
IC502 BA4558F MIC AMP
IC503 BA4558F BUF
IC504 BA4558F MIC AMP
IC401 HES8222C NORMAL AUDIO AMP
PG406
PG808
PG404
PG403
CN401 PG401
PG501
PG804
PG402 CN402
PG807
PG2
PG1
T401
Q401 2SD602R(WR) BIAS OSC
Q501 2SC4081R(BR) MUTE
Q502 2SC4081R(BR) AMP
Q503 2SC4081R(BR) MUTE
Q504 DTC144EU(26) INV.
Q505R 2SC4081R(BR) MUTE
Q505L 2SC4081R(BR) MUTE
Q508 2SC4081R(BR) FADE CONT.
Q509 2SC4081R(BR) 9V SW
Q510 2SC4081R(BR) LED DRIVE
Q511 2SC4081R(BR) MUTE SW
Q512 DTC144EU(26) INV.
Q513 2SC4081R(BR) REG
Q514 2SC4081R(BR) REG
Q515 DTC144EU(26) SW
Q581 2SC2412KR (BR) SW
Q582 FMC2 (C2) SW
D501 MA141WA (MN)
D502 MA141WK (MT)
D503 MA141WK (MT)
D504 MA141WK (MT)
D581 MA141WK (MT)
ZD501 MA3100L(10L) 9.4-9.9V
RT401 47K-B AUDIO BIAS LEVEL
RT502 2.2K-B FM AUD REC LEVEL
VCR
VCA
20kHz LPF
PNR
PRE EMPHA
DE-EMPHA
HOLD AMP
AUDIO CLIP
1.7MHz MOD
1.3MHz FM MOD
FM DEMOD
1.7MHz BPF
1.3MHz BPF
OUTPUT SELECT
DO DET
FM DET
HOLD PULSE GEN
PB EQ
PEAK EQ
REC EQ
FADE/ALC
NFB
BIAS OSC
ZOOM SW
FULL ERASE HEAD
AUDIO ERASE HEAD
AUDIO REC/PB HEAD
DEW SENSOR
To SYS. CON.
To SERVO
To LUMA PG204
To LUMA PG303
To ENCODER PG205
To ENCODER PG207
To FUNCTION SW CN1FS
To MIC PG1M
To FM AUDIO PG002
To BATT
JK1 DC JACK
MAIN (AUDIO SECTION) P. C. B
1
2
3
4
5
6
7
8
A
B
C
D
E

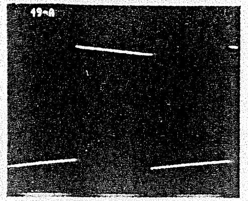
SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

PRE AMP SCHEMATIC

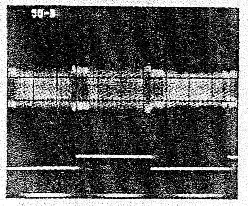
48-A IC101-37 4.8Vp-p
1V/10.0msec.cm
REC/PLAY

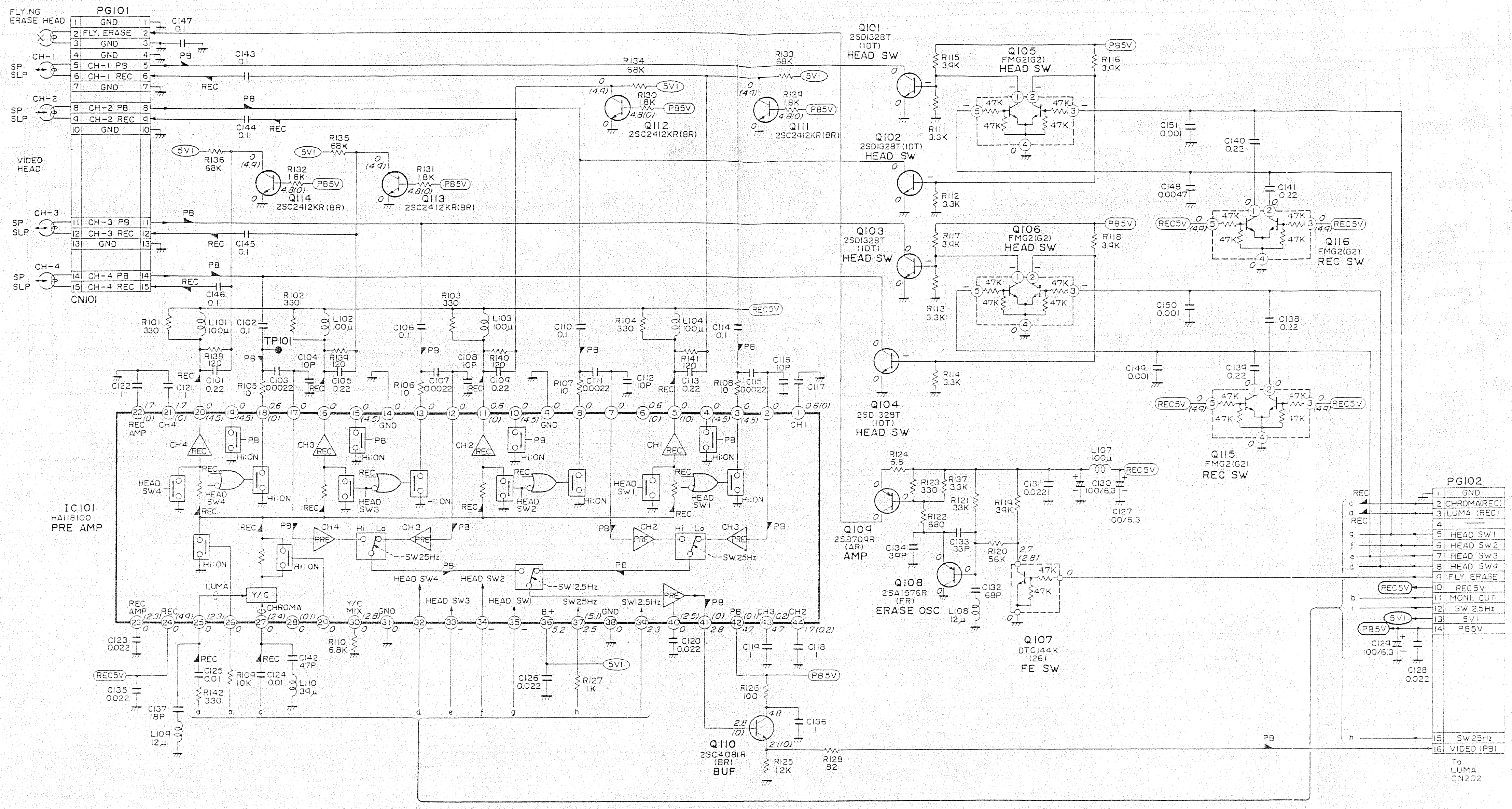


49-A IC101-39 5.3Vp-p
1V/10.0msec.cm
REC/PLAY

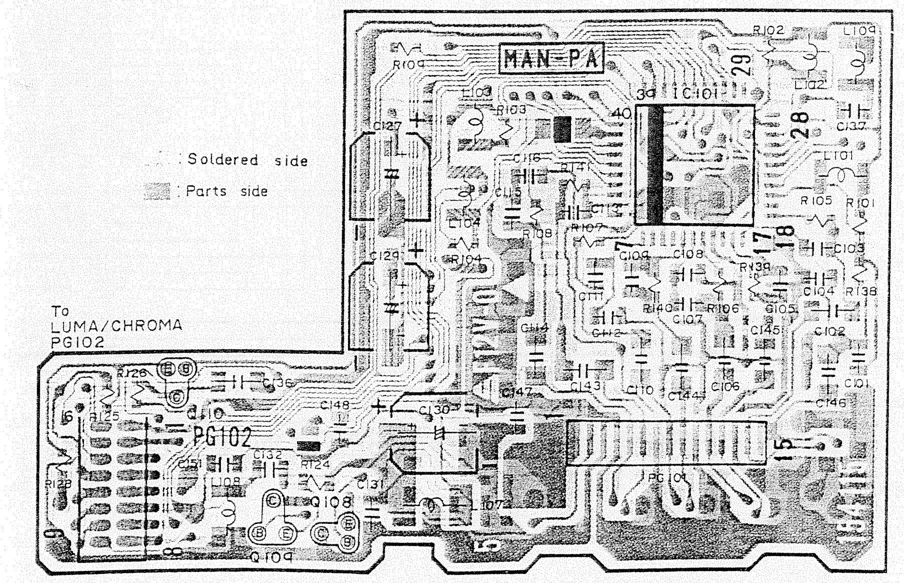


50-B IC101-41 590mVp-p
0.2V/5.0msec.cm
PLAY



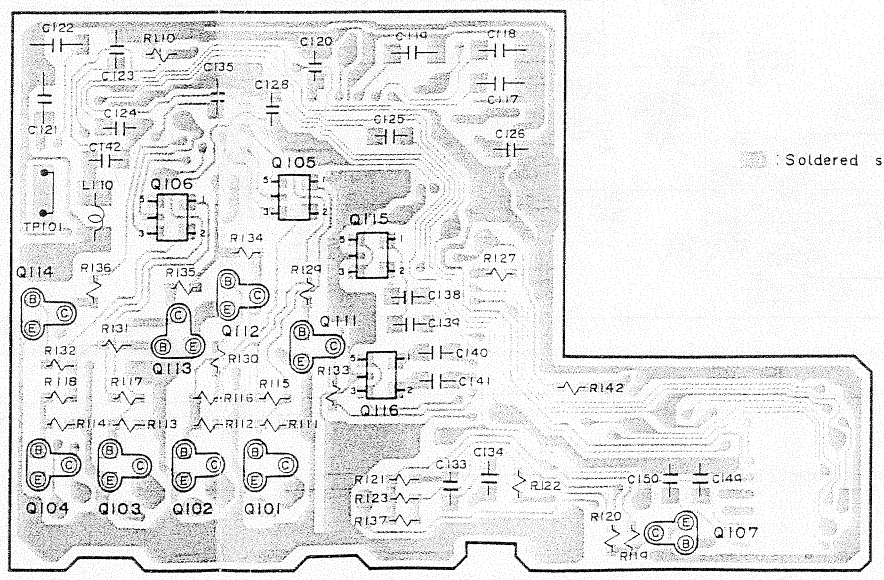

FLYING ERASE HEAD
PG101
GND
FLY. ERASE
CH-1 PB
CH-1 REC
CH-2 PB
CH-2 REC
CH-3 PB
CH-3 REC
CH-4 PB
CH-4 REC
CN101
SP
SLP
CH-1
CH-2
CH-3
CH-4
VIDEO HEAD
Q101 2SD1328T (1DT) HEAD SW
Q102 2SD1328T (1DT) HEAD SW
Q103 2SD1328T (1DT) HEAD SW
Q104 2SD1328T (1DT) HEAD SW
Q105 FMG2(G2) HEAD SW
Q106 FMG2(G2) HEAD SW
Q116 FMG2(G2) REC SW
Q115 FMG2(G2) REC SW
Q111 2SC2412KR(BR)
Q112 2SC2412KR(BR)
Q113 2SC2412KR(BR)
Q114 2SC2412KR(BR)
Q109 2SB709AR (AR) AMP
Q108 2SA1576R (FR) ERASE OSC
Q107 DTC144K (26) FE SW
Q110 2SC4081R (BR) BUF
TP101
IC101 HA118100 PRE AMP
REC AMP
HEAD SW1
HEAD SW2
HEAD SW3
HEAD SW4
Hi:ON
LUMA
Y/C MIX
CHROMA
SW25Hz
SW12.5Hz
PB5V
5V1
REC5V
PG102
GND
CHROMA(REC)
LUMA (REC)
HEAD SW1
HEAD SW2
HEAD SW3
HEAD SW4
FLY. ERASE
REC5V
MONI. CUT
SW12.5Hz
5V1
PB5V
SW25Hz
VIDEO (PB)
To LUMA CN202

PRE AMP CIRCUIT BOARD


Soldered side
Parts side
To LUMA/CHROMA PG102
MAN-PA
IC101
PG102
Q108
Q109

PRE AMP P.C.B
(COMPONENT SIDE)

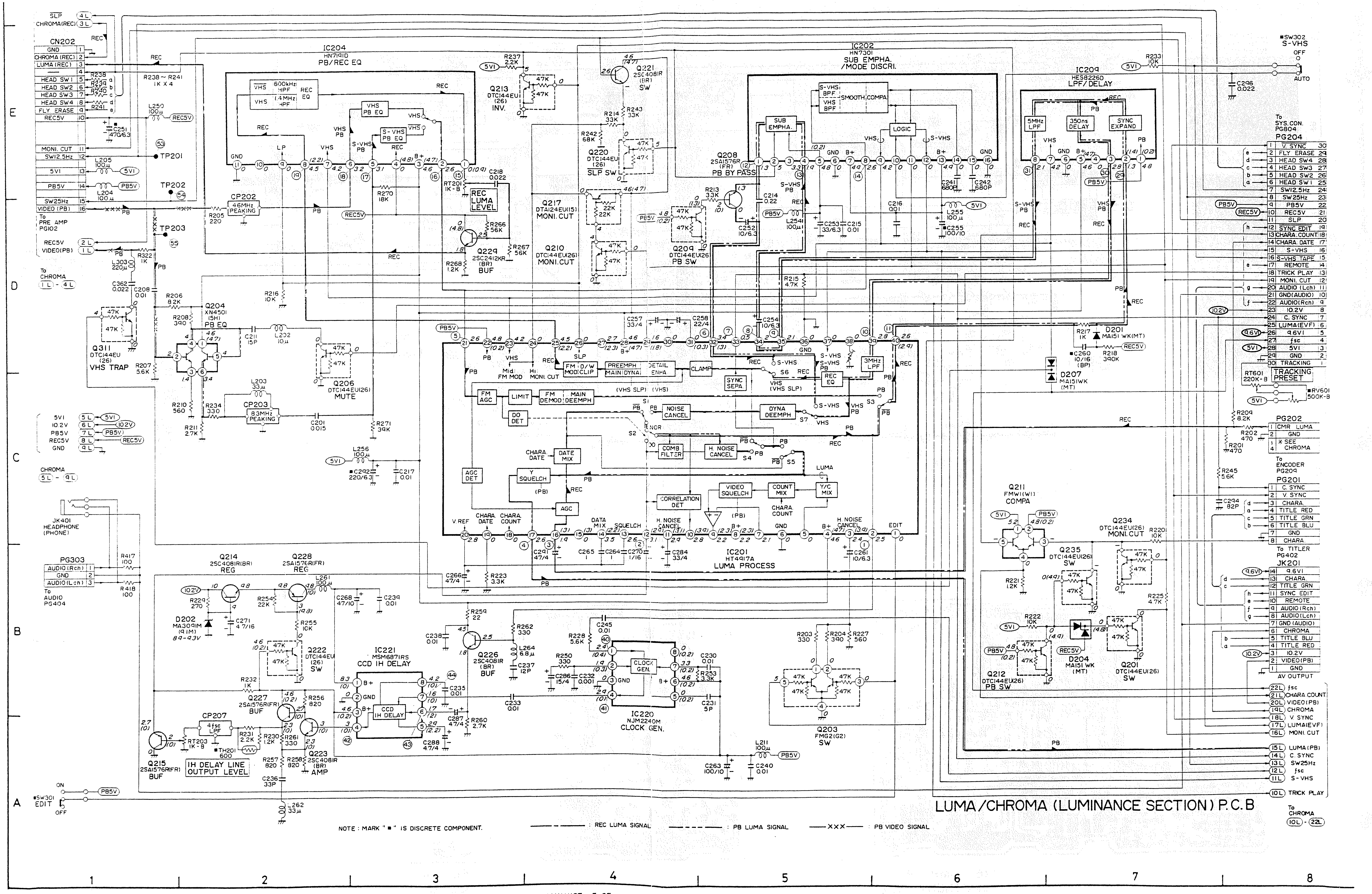
PRE AMP P.C.B


Soldered side
TP101
Q114
Q113
Q112
Q111
Q105
Q106
Q115
Q116
Q104
Q103
Q102
Q101
Q107

PRE AMP P.C.B
(SOLDER SIDE)

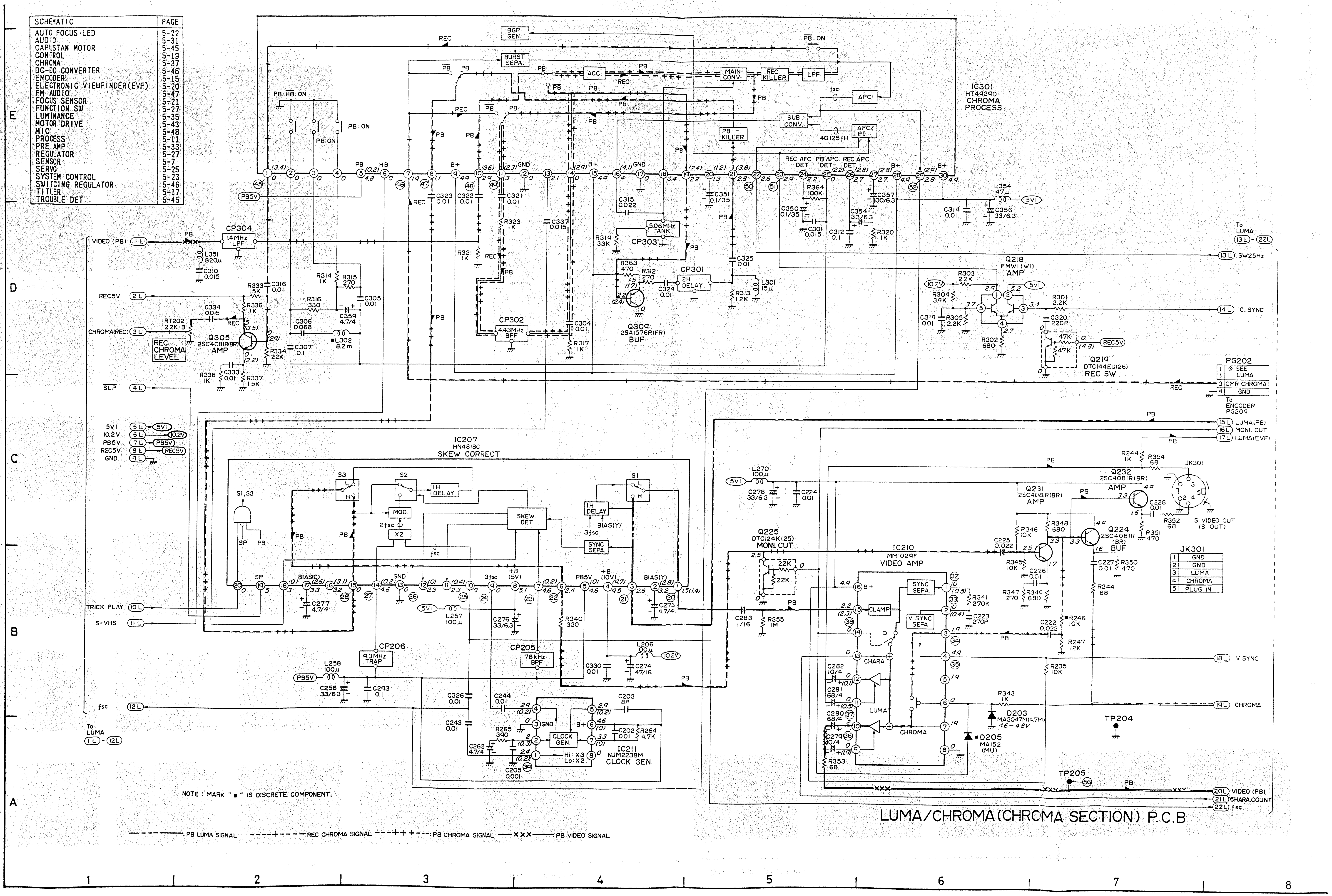
SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

LUMINANCE/CHROMA (LUMINANCE SECTIUON) SCHEMATIC


CN202
GND
CHROMA (REC)
LUMA (REC)
HEAD SW1
HEAD SW2
HEAD SW3
HEAD SW4
FLY ERASE
REC5V
MONI. CUT
SW12.5Hz
5V1
PB5V
SW25Hz
VIDEO (PB)
To PRE AMP PG102
To CHROMA (1L) - (4L)
R238 ~ R241 1K X 4
IC204 HN7191D PB/REC EQ
600kHz HPF
1.4MHz HPF
REC EQ
VHS PB EQ
S-VHS PB EQ
CP202 4.6MHz PEAKING
TP201
TP202
TP203
REC LUMA LEVEL
Q229 2SC2412KR (BR) BUF
Q213 DTC144EU (26) INV.
Q221 2SC4081R (BR) SW
Q220 DTC144EU (26) SLP SW
Q217 DTA124EU(15) MONI. CUT
Q210 DTC144EU(26) MONI. CUT
IC202 HN7301 SUB EMPHA. /MODE DISCRI.
SUB EMPHA.
S-VHS BPF
VHS BPF
SMOOTH COMPA
LOGIC
Q208 2SA1576R (FR) PB BY PASS
Q209 DTC144EU(26) PB SW
IC209 HE582260 LPF/DELAY
5MHz LPF
350ns DELAY
SYNC EXPAND
SW302 S-VHS OFF AUTO
To SYS. CON. PG804
PG204
V. SYNC
FLY ERASE
HEAD SW4
HEAD SW3
HEAD SW2
HEAD SW1
SW12.5Hz
SW25Hz
PB5V
REC5V
SLP
SYNC EDIT
CHARA. COUNT
CHARA. DATE
S-VHS
S-VHS TAPE
REMOTE
TRICK PLAY
MONI. CUT
AUDIO (Lch)
GND (AUDIO)
AUDIO (Rch)
10.2V
C. SYNC
LUMA (EVF)
9.6V1
fsc
5V1
GND
TRACKING
RT601 220K-B TRACKING PRESET
RV601 500K-B
Q204 XN4501 (5H) PB EQ
Q311 DTC144EU (26) VHS TRAP
Q206 DTC144EU(26) MUTE
CP203 8.3MHz PEAKING
D201 MA151 WK (MT)
D207 MA151WK (MT)
FM AGC
LIMIT
FM DEMOD
MAIN DEEMPH
DO DET
FM D/W MOD CLIP
PREEMPH MAIN DYNA
DETAIL ENHA
CLAMP
SYNC SEPA
REC EQ
3MHz LPF
NOISE CANCEL
DYNA DEEMPH
COMB FILTER
H. NOISE CANCEL
DATE MIX
Y SQUELCH
AGC DET
AGC
CORRELATION DET
VIDEO SQUELCH
COUNT MIX
Y/C MIX
IC201 HT4917A LUMA PROCESS
V. REF
CHARA. DATE
CHARA. COUNT
DATA MIX
SQUELCH
EDIT
PG202
CMR LUMA
GND
X SEE CHROMA
To ENCODER PG209
PG201
C. SYNC
V. SYNC
CHARA.
TITLE RED
TITLE GRN
TITLE BLU
GND
CHARA.
To TITLER PG402
JK201
9.6V1
CHARA.
TITLE GRN
SYNC EDIT
REMOTE
AUDIO (Rch)
AUDIO (Lch)
GND (AUDIO)
CHROMA
TITLE BLU
TITLE RED
10.2V
VIDEO (PB)
GND
AV OUTPUT
(22L) fsc
(21L) CHARA COUNT
(20L) VIDEO (PB)
(19L) CHROMA
(18L) V. SYNC
(17L) LUMA (EVF)
(16L) MONI. CUT
(15L) LUMA (PB)
(14L) C. SYNC
(13L) SW25Hz
(12L) fsc
(11L) S-VHS
(10L) TRICK PLAY
To CHROMA (10L) - (22L)
Q211 FMW1(W1) COMPA
Q234 DTC144EU(26) MONI. CUT
Q235 DTC144EU(26) SW
Q212 DTC144EU(26) PB SW
D204 MA151 WK (MT)
Q201 DTC144EU(26) SW
JK401 HEADPHONE (PHONE)
PG303
AUDIO (Rch)
GND
AUDIO (Lch)
To AUDIO PG404
Q214 2SC4081R(BR) REG
Q228 2SA1576R(FR) REG
D202 MA3091M (9.1M)
Q222 DTC144EU (26) SW
IC221 MSM6871RS CCD 1H DELAY
Q226 2SC4081R (BR) BUF
IC220 NJM2240M CLOCK GEN.
Q203 FMG2(G2) SW
Q227 2SA1576R(FR) BUF
Q223 2SC4081R (BR) AMP
CP207 4fsc LPF
Q215 2SA1576R(FR) BUF
1H DELAY LINE OUTPUT LEVEL
SW301 EDIT ON OFF
LUMA/CHROMA (LUMINANCE SECTION) P.C.B
NOTE : MARK "■" IS DISCRETE COMPONENT.
REC LUMA SIGNAL
PB LUMA SIGNAL
PB VIDEO SIGNAL
A
B
C
D
E
1
2
3
4
5
6
7
8

LUMINANCE/CHROMA (CHROMA SECTIUON) SCHEMATIC

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCHING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45


IC301
HT4934D
CHROMA
PROCESS
BGP GEN.
BURST SEPA.
ACC
MAIN CONV
REC KILLER
LPF
APC
SUB CONV.
AFC/PI
PB KILLER
40.125fH
REC AFC DET.
PB APC DET.
REC APC DET.
CP304 1.4MHz LPF
CP303 5.06MHz TANK
CP301 2H DELAY
CP302 4.43MHz BPF
Q309 2SA1576R(FR) BUF
Q305 2SC4081R(BR) AMP
REC CHROMA LEVEL
Q218 FMW1(W1) AMP
Q219 DTC144EU(26) REC SW
PG202
1 X SEE LUMA
3 CMR CHROMA
4 GND
To ENCODER PG209
To LUMA (13L)-(22L)
SW25Hz
C. SYNC
LUMA(PB)
MONI. CUT
LUMA(EVF)
VIDEO (PB) (1L)
REC5V (2L)
CHROMA(REC) (3L)
SLP (4L)
5V1 (5L)
10.2V (6L)
PB5V (7L)
REC5V (8L)
GND (9L)
TRICK PLAY (10L)
S-VHS (11L)
fsc (12L)
To LUMA (1L)-(12L)
IC207
HN4816C
SKEW CORRECT
S1, S2, S3
1H DELAY
MOD.
X2
SKEW DET
SYNC SEPA
BIAS(C)
BIAS(Y)
CP206 9.3MHz TRAP
CP205 7.8kHz BPF
IC211
NJM2238M
CLOCK GEN.
Hi: X3 Lo: X2
Q225 DTC124K(25) MONI CUT
IC210
MM1029F
VIDEO AMP
SYNC SEPA
CLAMP
V SYNC SEPA
CHARA
LUMA
CHROMA
Q231 2SC4081R(BR) AMP
Q232 2SC4081R(BR) AMP
Q224 2SC4081R (BR) BUF
JK301
S VIDEO OUT (S OUT)
D203 MA3047M(47M) 4.6-4.8V
D205 MA152 (MU)
TP204
TP205
V SYNC
CHROMA
(20L) VIDEO (PB)
(21L) CHARA.COUNT
(22L) fsc
NOTE : MARK "■" IS DISCRETE COMPONENT.
PB LUMA SIGNAL
REC CHROMA SIGNAL
PB CHROMA SIGNAL
PB VIDEO SIGNAL
1 2 3 4 5 6 7 8
A B C D E

JK301	
1	GND
2	GND
3	LUMA
4	CHROMA
5	PLUG IN

LUMA/CHROMA(CHROMA SECTION) P.C.B

LUMINANCE/CHROMA CIRCUIT BOARD —COMPONENT SIDE—

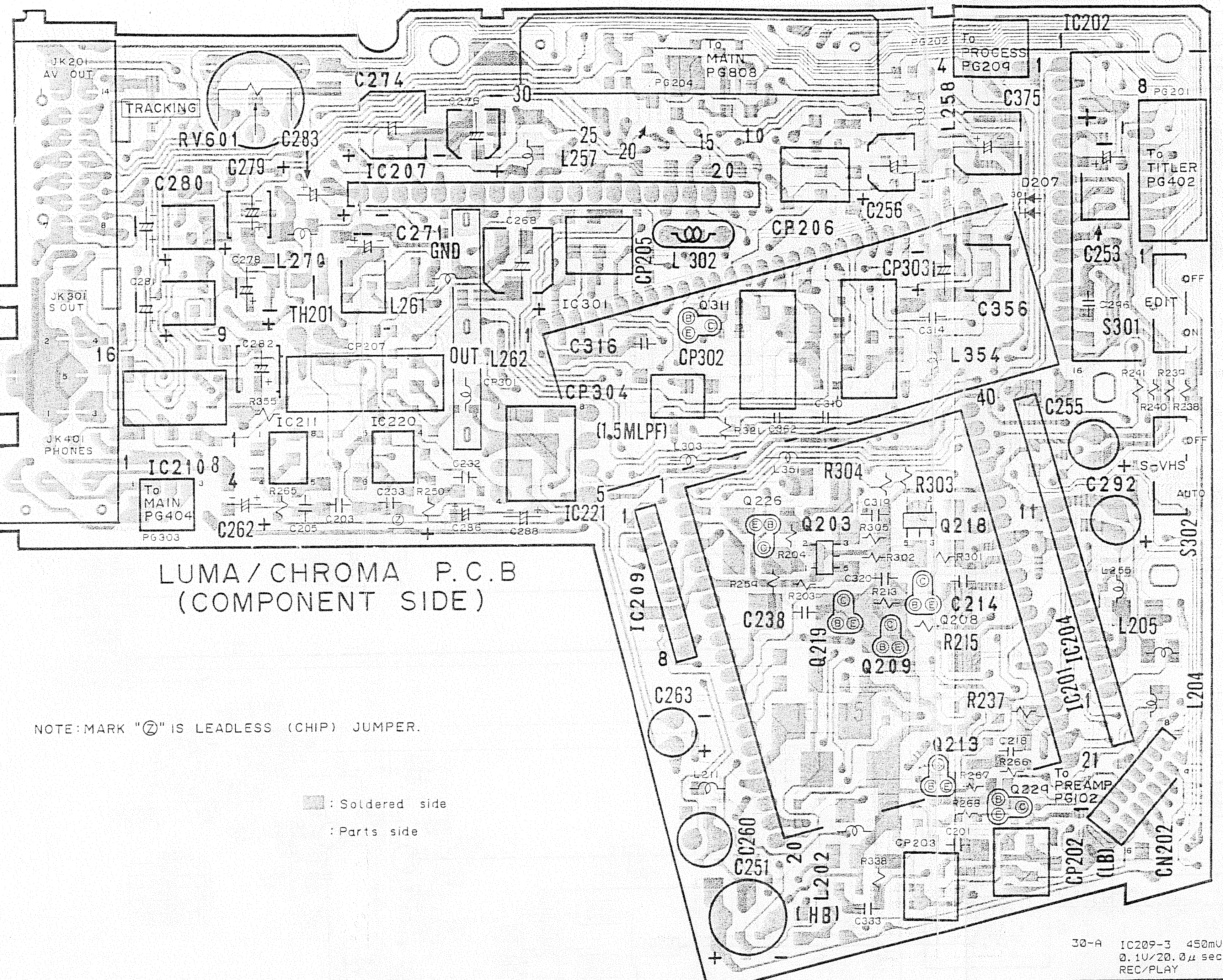
E

D

C

B

A


JK201 AV OUT
TRACKING
RV601
C283
C274
To MAIN PG808
PG204
PG202
To PROCESS PG209
IC202
C375
L258
PG201
To TITLER PG402
C279
C280
IC207
L257
C256
CP206
D207
C253
C271
GND
L270
TH201
L261
CP205
L302
Q311
CP303
C356
S301
EDIT
OFF
ON
JK301 S OUT
C316
CP302
IC301
OUT
L262
CP304
(1.5MLPF)
L354
C255
C292
S-VHS
AUTO
S302
JK401 PHONES
IC210
IC211
IC220
To MAIN PG404
PG303
C262
IC221
R304
R303
Q203
Q218
Q226
C214
C238
Q219
Q209
R215
IC209
IC201
IC204
L205
L204
C263
R237
Q213
Q229
To PREAMP PG102
CN202
CP202
(LB)
C260
C251
L202
(HB)
CP203

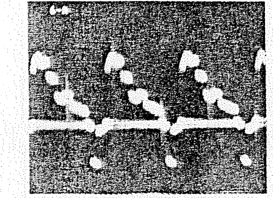
LUMA/CHROMA P.C.B
(COMPONENT SIDE)

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

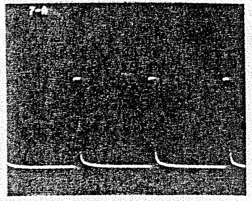
▨ : Soldered side

: Parts side

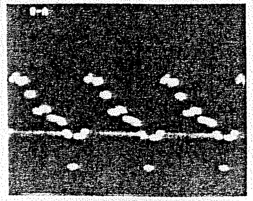
6-A IC201-32 500mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



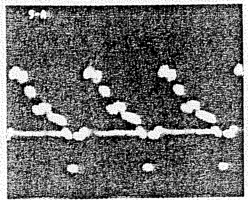
7-A IC201-33 3.9Vp-p
1V/20.0μ sec.cm
REC/PLAY



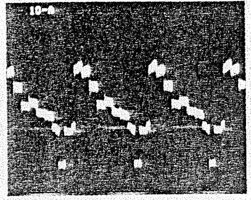
8-A IC201-34 410mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



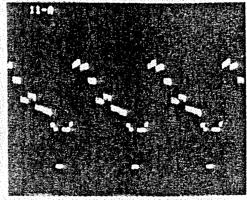
9-A IC201-35 450mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



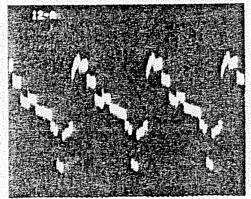
10-A IC201-39 450mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



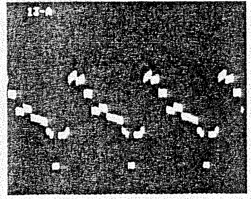
11-A IC201-40 950mVp-p
0.2V/20.0μ sec.cm
REC/PLAY



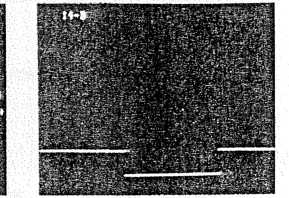
12-A IC202-1 520mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



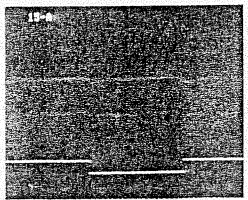
13-A IC202-4 420mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



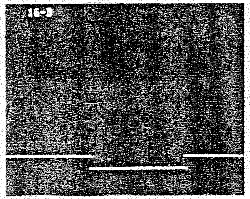
14-B IC202-8 110mVp-p
50mV/5.0msec.cm
PLAY



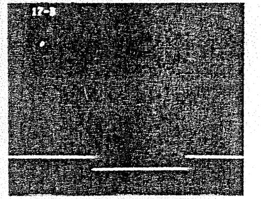
15-A IC204-1 260mVp-p
0.1V/5.0msec.cm
REC



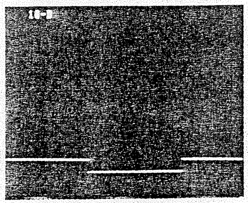
16-B IC204-2 110mVp-p
50mV/5.0msec.cm
PLAY



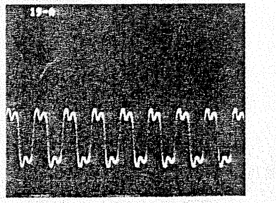
17-B IC204-5 130mVp-p
50mV/5.0msec.cm
PLAY



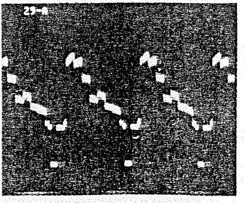
18-B IC204-6 110mVp-p
50mV/5.0msec.cm
PLAY



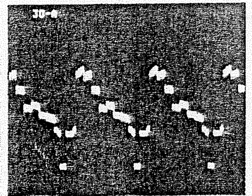
19-A IC204-8 1.3Vp-p
0.5V/100nsec.cm
REC



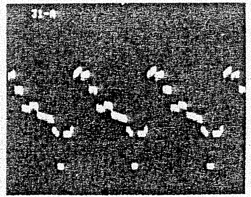
29-A IC209-2 500mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



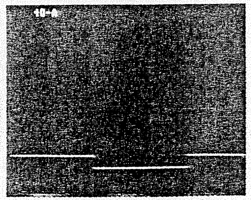
30-A IC209-3 450mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



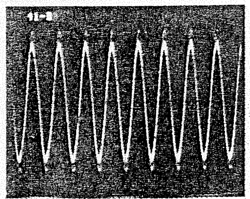
31-A IC209-8 450mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



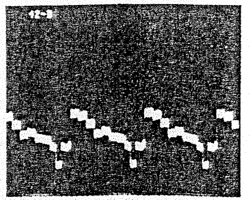
40-A IC220-1 120mVp-p
50mV/5.0msec.cm
REC/PLAY



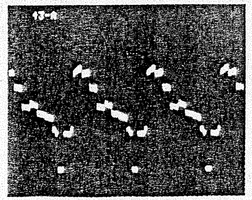
41-B IC220-4 610mVp-p
0.1V/50.0nsec.cm
PLAY



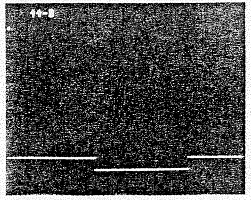
42-B IC221-4 1.3Vp-p
0.5V/20.0μ sec.cm
PLAY



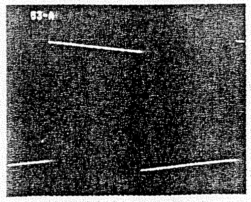
43-A IC221-6 460mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



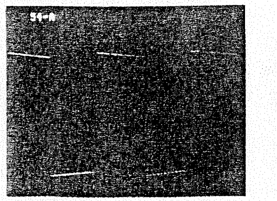
44-B IC221-7 150mVp-p
50mV/5.0msec.cm
PLAY



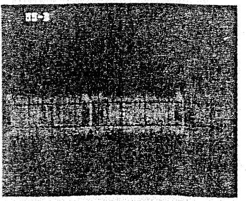
53-A TP201 5.6Vp-p
1V/10.0msec.cm
REC/PLAY



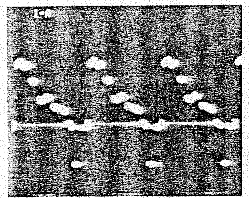
54-A TP202 5.0Vp-p
1V/10.0msec.cm
REC/PLAY



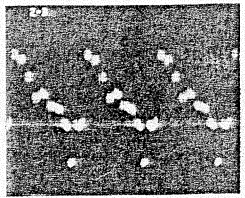
55-B TP203 130mVp-p
50mV/5.0msec.cm
PLAY



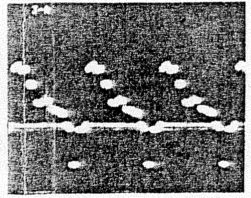
1-A IC201-2 500mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



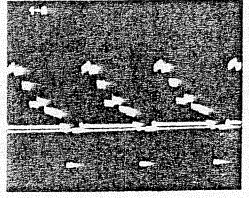
2-B IC201-12 540mVp-p
0.1V/20.0μ sec.cm
PLAY



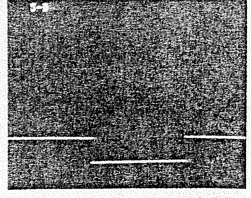
3-A IC201-16 450mVp-p
0.1V/20.0μ sec.cm
REC



4-A IC201-17 890mVp-p
0.2V/20.0μ sec.cm
REC/PLAY



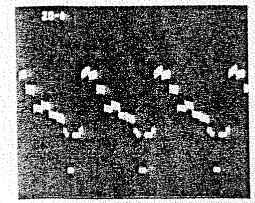
5-B IC201-21 87mVp-p
50mV/5.0msec.cm
PLAY



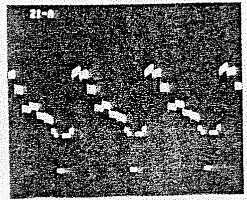
1 2 3 4 5 6 7 8

LUMINANCE/CHROMA CIRCUIT BOARD —SOLDER SIDE—

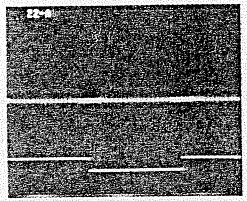
20-A IC207-1 940mVp-p
0.2V/20.0μ sec.cm
REC/PLAY



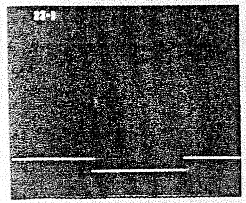
21-A IC207-3 900mVp-p
0.2V/20.0μ sec.cm
REC/PLAY



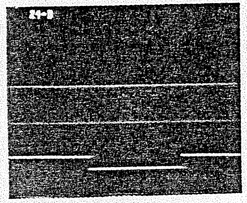
22-A IC207-6 410mVp-p
0.2V/5.0msec.cm
REC/PLAY



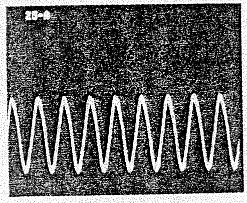
23-B IC207-7 210mVp-p
0.1V/5.0msec.cm
PLAY



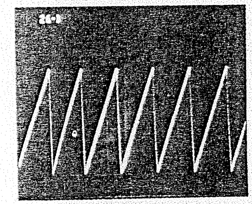
24-B IC207-9 870mVp-p
0.5V/5.0msec.cm
PLAY



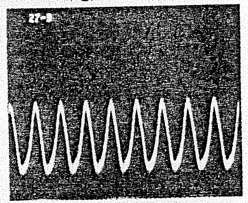
25-A IC207-10 320mVp-p
0.1V/200nsec.cm
REC/PLAY



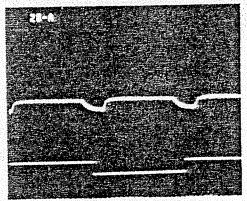
26-B IC207-12 2.3Vp-p
0.5V/20.0μ sec.cm
PLAY



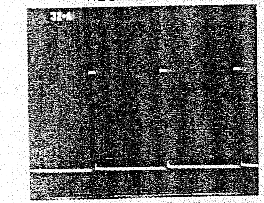
27-B IC207-14 160mVp-p
50mV/200nsec.cm
PLAY



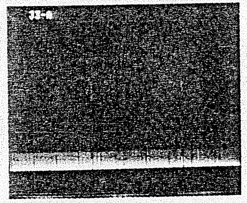
28-A IC207-15 450mVp-p
0.2V/5.0msec.cm
REC/PLAY



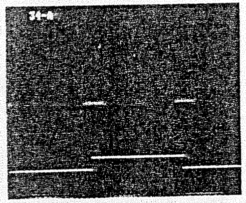
32-A IC210-1 4.4Vp-p
1V/20.0μ sec.cm
REC/PLAY



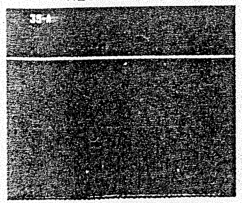
33-A IC210-2 3.9Vp-p
1V/5.0msec.cm
REC/PLAY



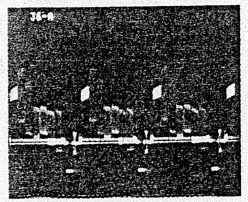
34-A IC210-3 210mVp-p
0.1V/5.0msec.cm
REC/PLAY



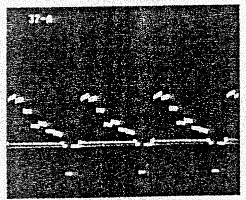
35-A IC210-4 5.0Vp-p
1V/5.0msec.cm
REC/PLAY



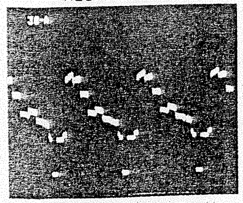
36-A IC210-10 2.4Vp-p
0.5V/20.0μ sec.cm
REC/PLAY



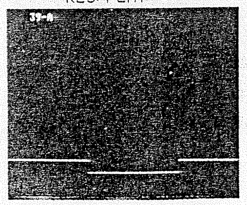
37-A IC210-11 1.8Vp-p
0.5V/20.0μ sec.cm
REC/PLAY



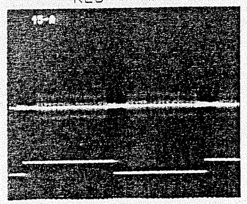
38-A IC210-15 900mVp-p
0.2V/20.0μ sec.cm
REC/PLAY



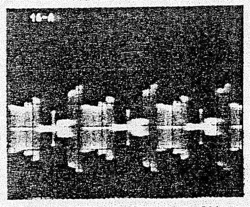
39-A IC211-1 300mVp-p
0.1V/5.0msec.cm
REC/PLAY



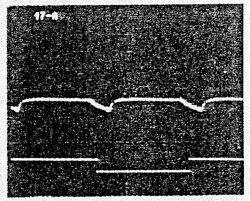
45-A IC301-1 410mVp-p
0.2V/5.0msec.cm
REC



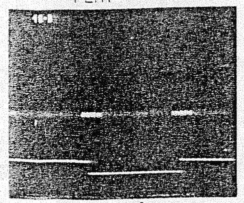
46-A IC301-7 780mVp-p
0.2V/20.0μ sec.cm
REC



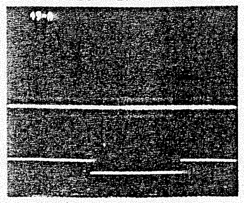
47-A IC301-8 430mVp-p
0.2V/5.0msec.cm
REC/PLAY



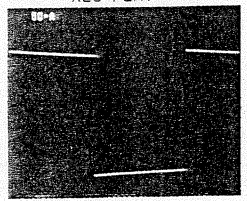
48-B IC301-10 54mVp-p
50mV/5.0msec.cm
PLAY



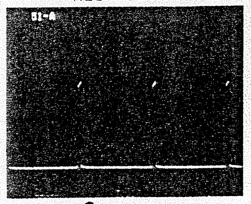
49-A IC301-11 810mVp-p
0.5V/5.0msec.cm
REC/PLAY



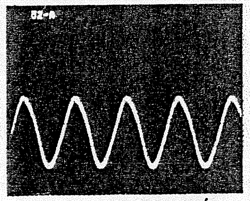
50-A IC301-22 5.0Vp-p
1V/5.0msec.cm
REC/PLAY



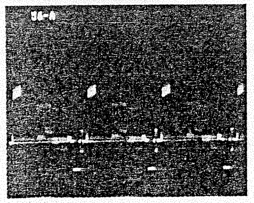
51-A IC301-23 7.8Vp-p
2V/20.0μ sec.cm
REC/PLAY

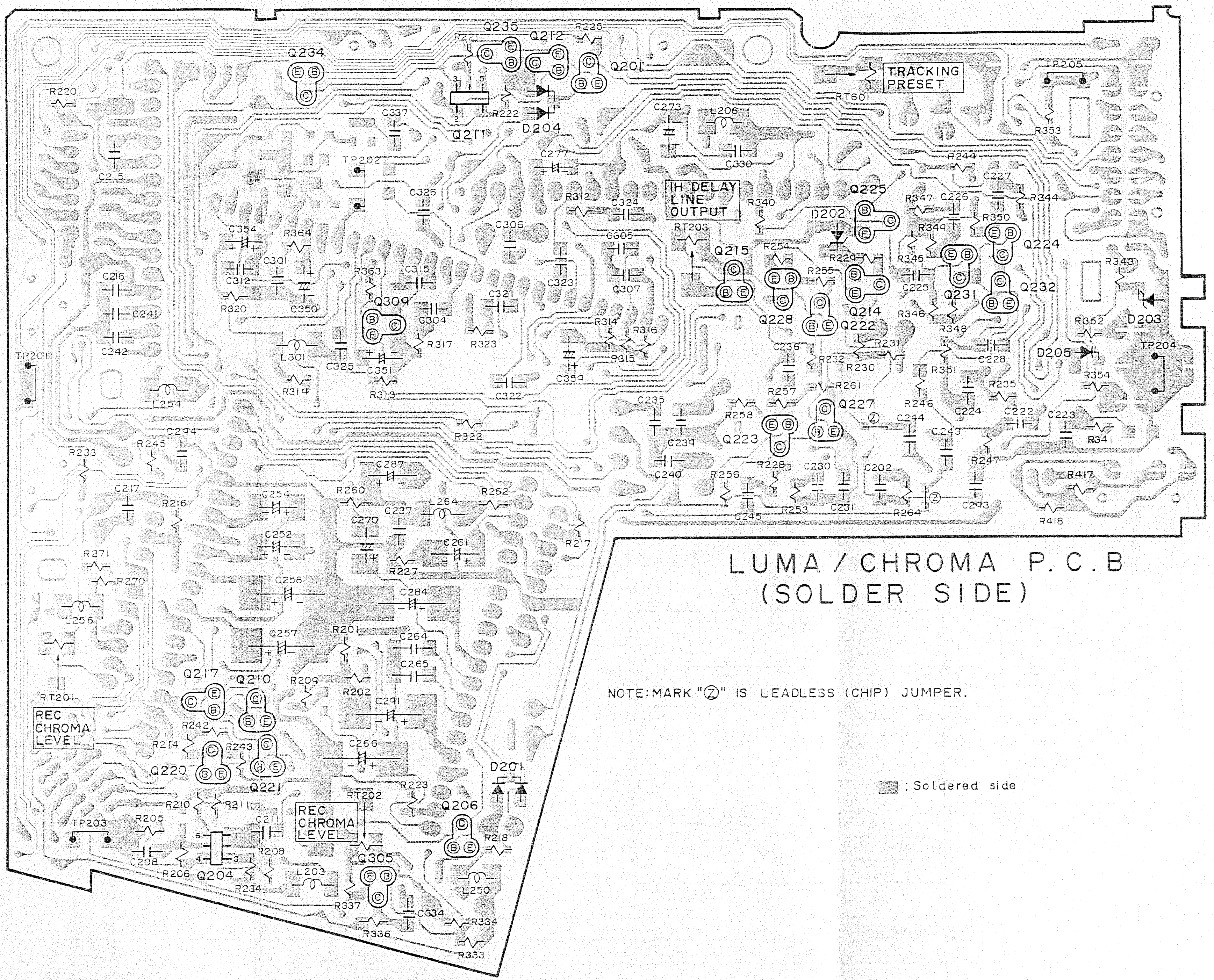


52-A IC301-29 320mVp-p
0.1V/100nsec.cm
REC/PLAY



56-A TP205 2.4Vp-p
0.5V/20.0μ sec.cm
REC/PLAY



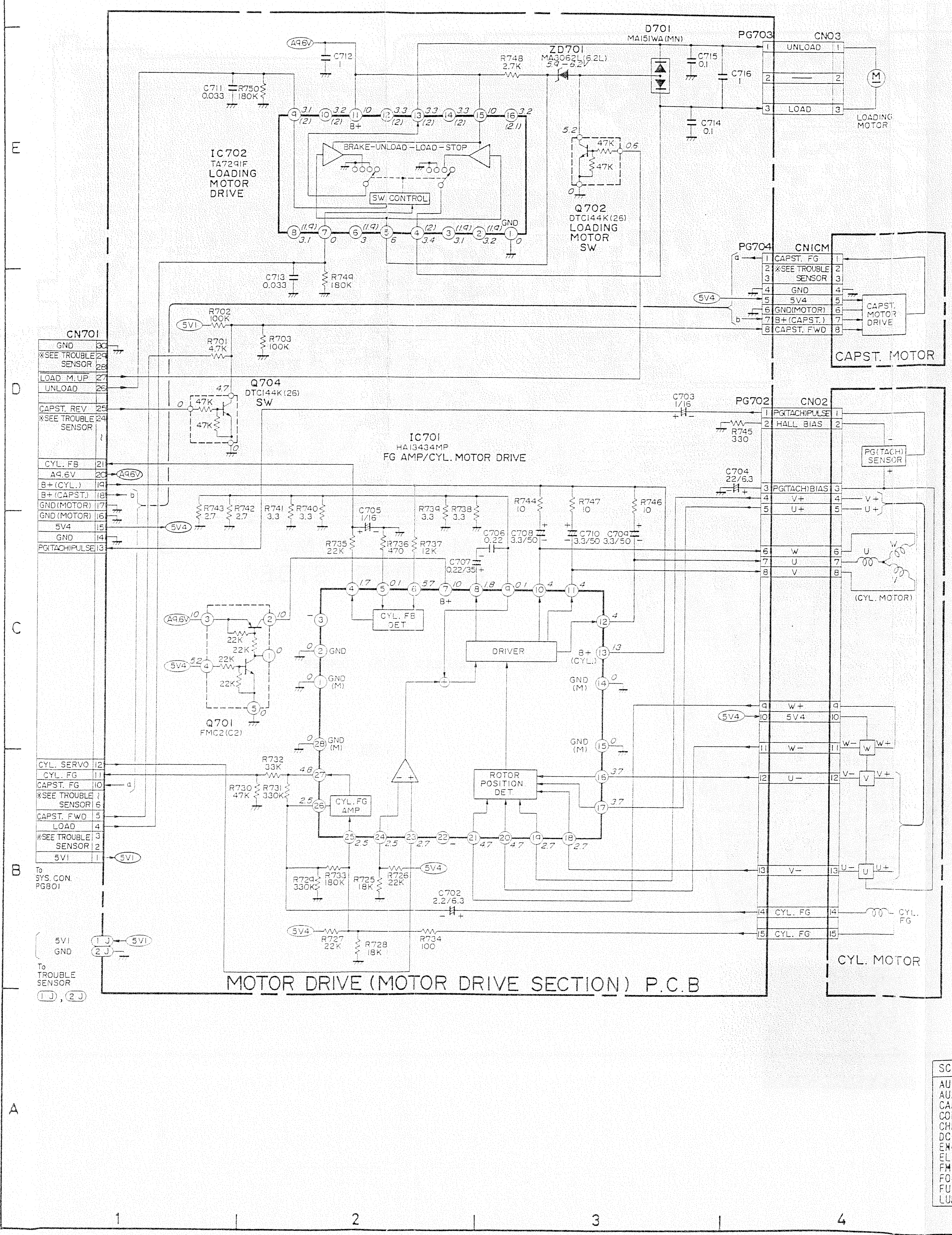


LUMA / CHROMA P. C. B (SOLDER SIDE)

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

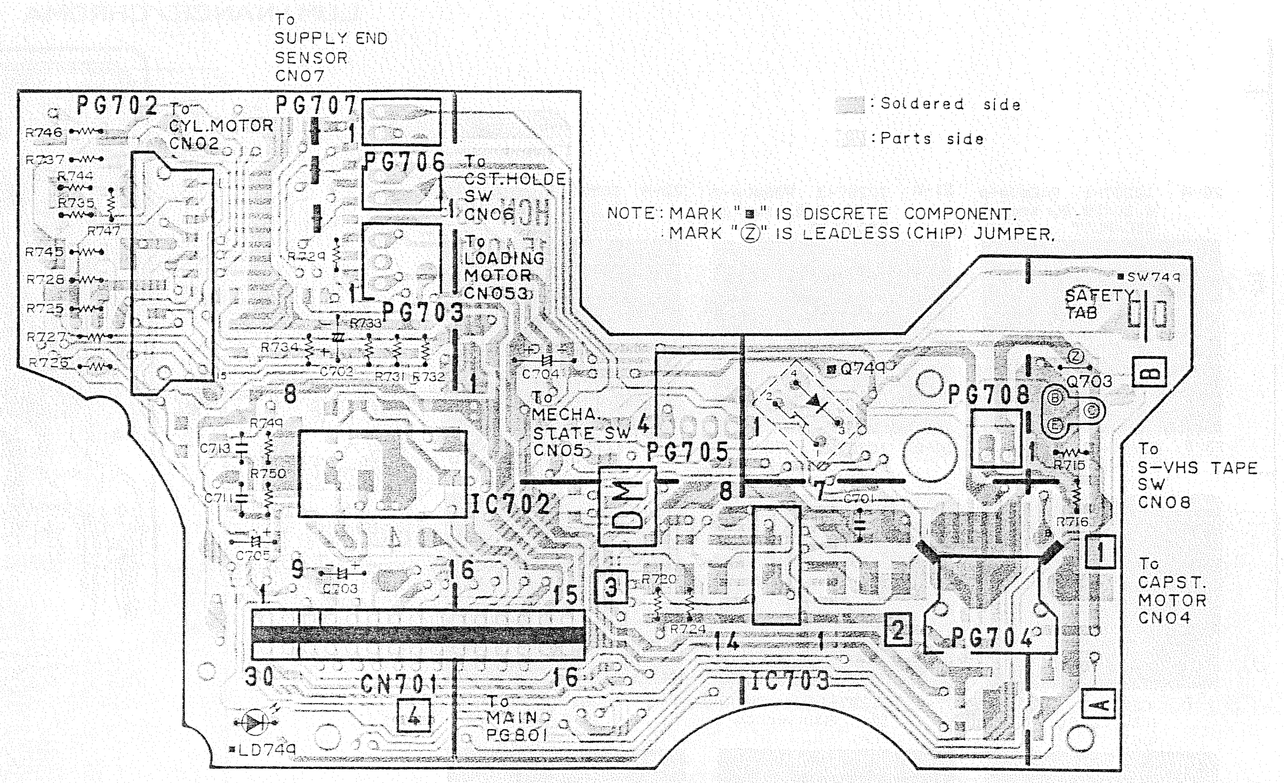
▨ : Soldered side

MOTOR DRIVE (MOTOR DRIVE SECTION) SCHEMATIC



D701 MA151WA(MN)
PG703
CN03
UNLOAD
LOAD
LOADING MOTOR
ZD701 MA3062L(6.2L)
R748 2.7K
C712
C715 0.1
C716
C714 0.1
C711 0.033
R750 180K
IC702 TA7291F LOADING MOTOR DRIVE
BRAKE-UNLOAD-LOAD-STOP
SW CONTROL
Q702 DTC144K(26) LOADING MOTOR SW
C713 0.033
R749 180K
PG704
CN1CM
CAPST. FG
※SEE TROUBLE SENSOR
GND
5V4
GND(MOTOR)
B+(CAPST.)
CAPST. FWD
CAPST. MOTOR DRIVE
CAPST. MOTOR
CN701
GND
LOAD M.UP
UNLOAD
CAPST. REV
CYL. FB
A9.6V
B+(CYL.)
B+(CAPST.)
GND(MOTOR)
5V4
GND
PG(TACH)PULSE
CYL. SERVO
CYL. FG
CAPST. FG
CAPST. FWD
LOAD
5V1
To SYS. CON. PG801
R702 100K
R701 4.7K
R703 100K
Q704 DTC144K(26) SW
IC701 HA13434MP FG AMP/CYL. MOTOR DRIVE
C703 1/16
PG702
CN02
PG(TACH)PULSE
HALL BIAS
R745 330
C704 22/6.3
PG(TACH)BIAS
V+
U+
W
U
V
PG(TACH) SENSOR
(CYL. MOTOR)
CYL. FB DET
DRIVER
ROTOR POSITION DET
CYL. FG AMP
Q701 FMC2(C2)
W+
W−
U−
V−
CYL. FG
CYL. MOTOR
R732 33K
R730 47K
R731 330K
R729 330K
R733 180K
R725 18K
R726 22K
C702 2.2/6.3
R727 22K
R728 18K
R734 100
5V1
GND
To TROUBLE SENSOR (1J), (2J)
MOTOR DRIVE (MOTOR DRIVE SECTION) P.C.B
E
D
C
B
A
1
2
3
4

MOTOR DRIVE CIRCUIT BOARD

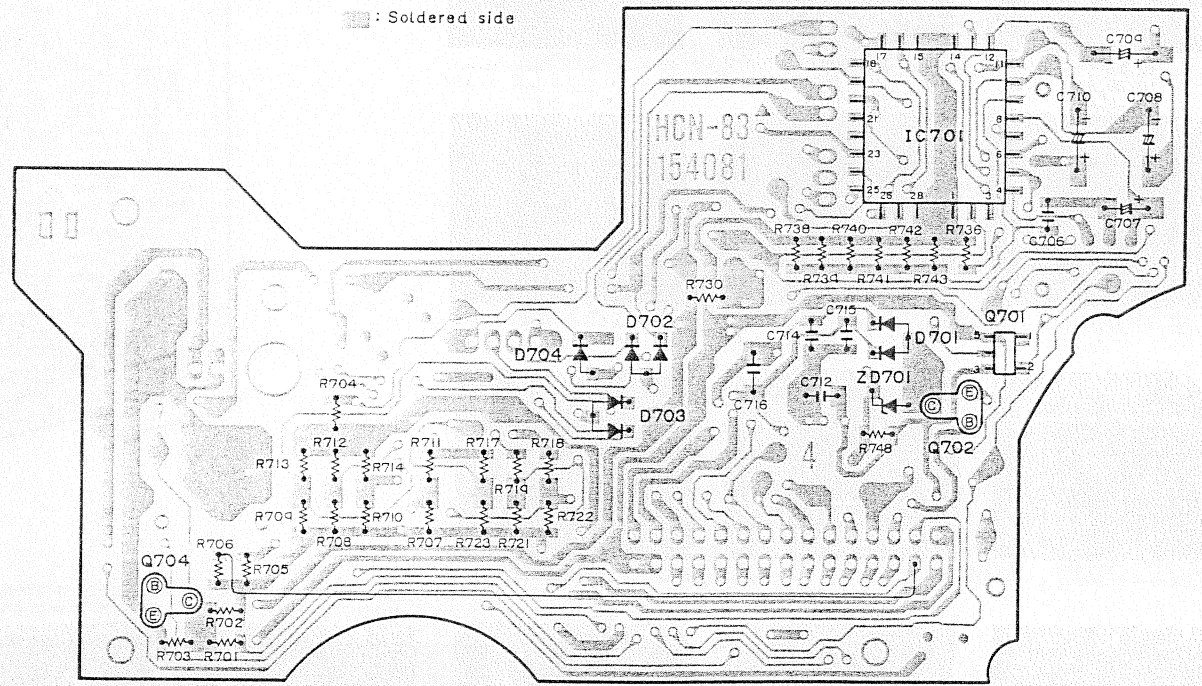


To SUPPLY END SENSOR CN07
PG702 To CYL. MOTOR CN02
PG707
PG706 To CST. HOLDE SW CN06
To LOADING MOTOR CN053
PG703
To MECHA. STATE SW CN05
PG705
IC702
IC703
CN701
To MAIN PG801
PG704
PG708
Q703
Q749
SW749
SAFETY TAB
LD749
To S-VHS TAPE SW CN08
To CAPST. MOTOR CN04
▨ : Soldered side
▨ : Parts side
5
6

NOTE: MARK "■" IS DISCRETE COMPONENT.
MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

MOTOR DRIVE P.C.B

(COMPONENT SIDE)



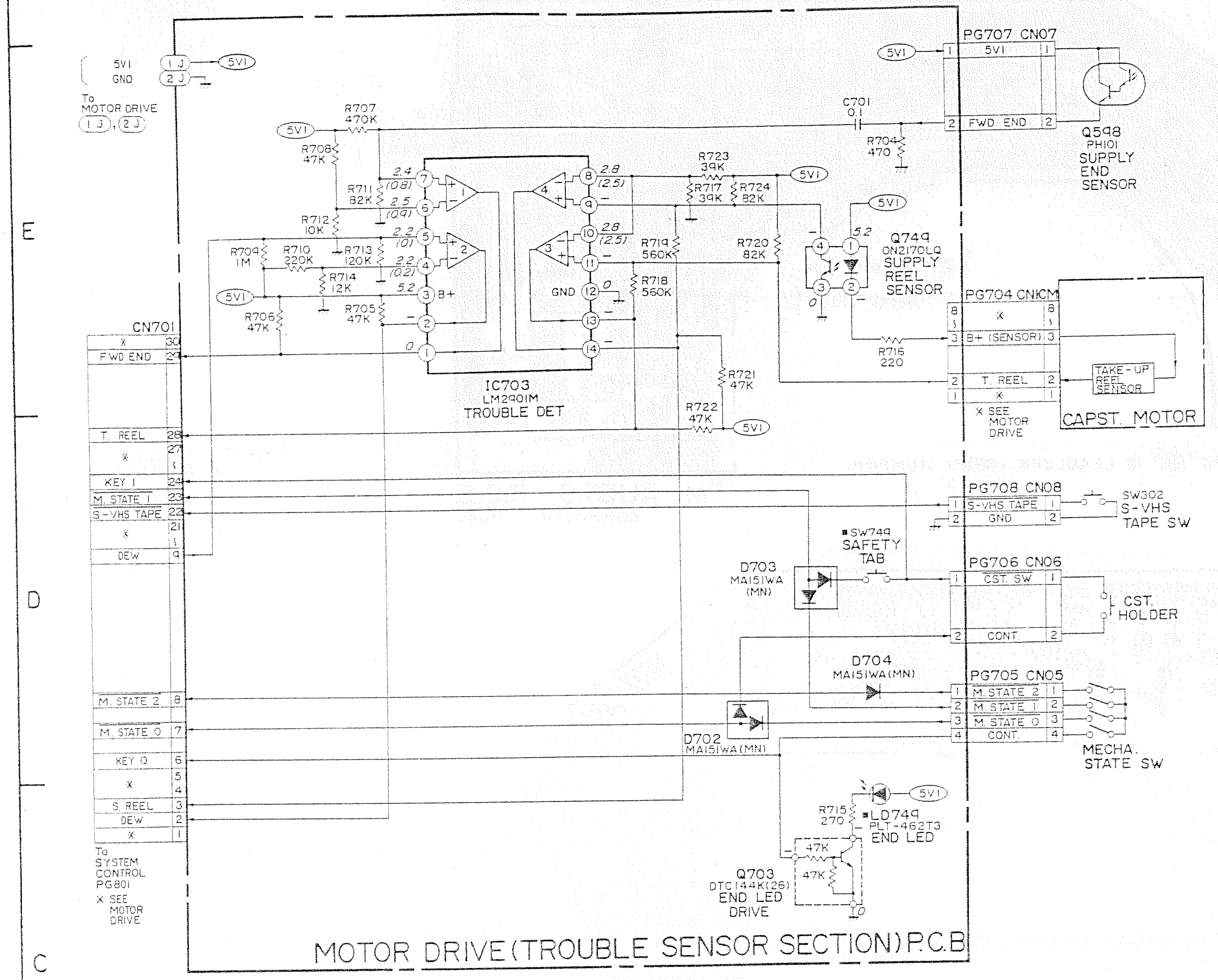
▨ : Soldered side
HCN-83 154081
IC701
Q701
D701
ZD701
Q702
D702
D703
D704
Q704
R701
R702
R703
C702
C706
C707
C708
C709
C710
C712
C714
C715
C716
7
8

MOTOR DRIVE P.C.B

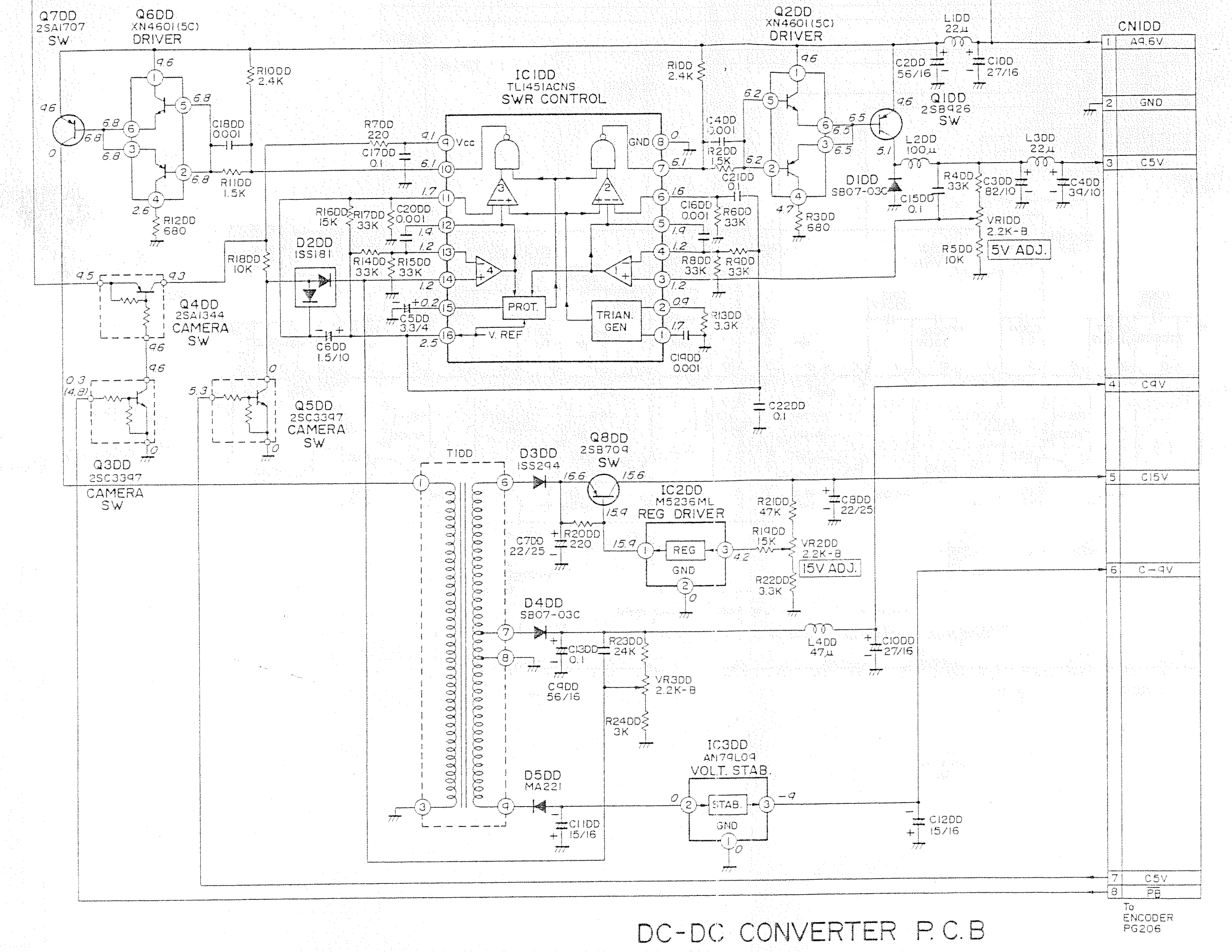
(SOLDER SIDE)

SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22	MOTOR DRIVE	5-43
AUDIO	5-31	MIC	5-48
CAPUSTAN MOTOR	5-45	PROCESS	5-11
CONTROL	5-19	PRE AMP	5-33
CHROMA	5-37	REGULATOR	5-27
DC-DC CONVERTER	5-46	SENSOR	5-7
ENCODER	5-15	SERVO	5-25
ELECTRONIC VIEWFINDER(EVF)	5-20	SYSTEM CONTROL	5-23
FM AUDIO	5-47	SWITCING REGULATOR	5-46
FOCUS SENSOR	5-21	TITLER	5-17
FUNCTION SW	5-27	TROUBLE DET	5-45
LUMINANCE	5-35		

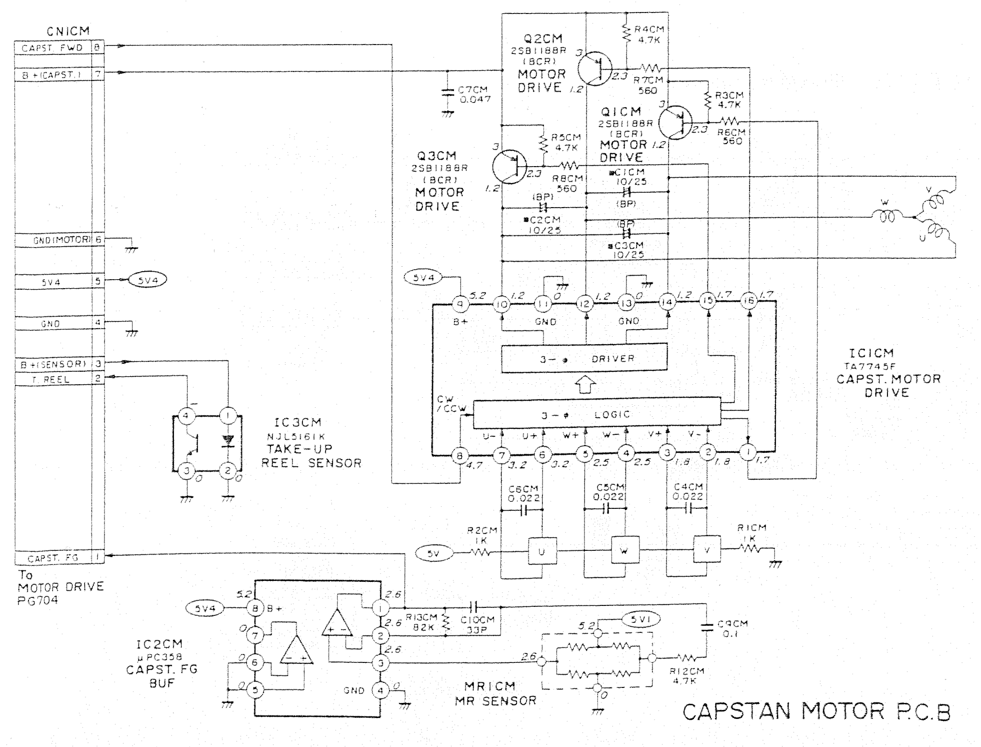
MOTOR DRIVE (TROUBLE DET SECTION) SCHEMATIC


5V1
GND
To MOTOR DRIVE
PG707 CN07
FWD END
Q598 PH101 SUPPLY END SENSOR
IC703 LM2901M TROUBLE DET
Q749 ON2170LQ SUPPLY REEL SENSOR
PG704 CNKM
B+ (SENSOR)
T. REEL
TAKE-UP REEL SENSOR
CAPST. MOTOR
CN701
PG708 CN08
S-VHS TAPE
SW302 S-VHS TAPE SW
SW749 SAFETY TAB
D703 MA151WA (MN)
PG706 CN06
CST. SW
CONT
CST. HOLDER
D704 MA151WA(MN)
PG705 CN05
M. STATE 2
M. STATE 1
M. STATE 0
MECHA. STATE SW
D702 MA151WA(MN)
LD749 PLT-462T3 END LED
Q703 DTC144K(26) END LED DRIVE
To SYSTEM CONTROL PG801
× SEE MOTOR DRIVE
MOTOR DRIVE(TROUBLE SENSOR SECTION)P.C.B

DC-DC CONVERTER SCHEMATIC (Reference)

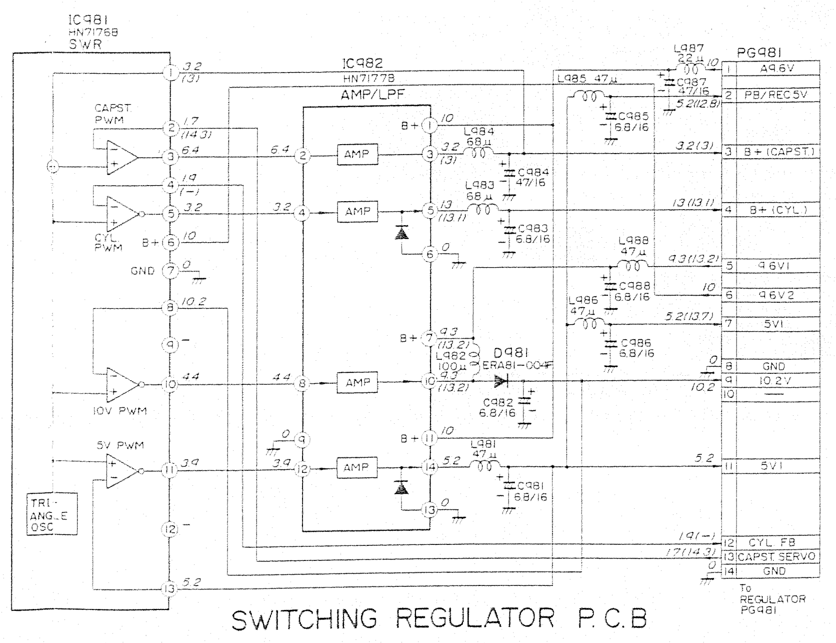

Q7DD 2SA1707 SW
Q6DD XN4601(5C) DRIVER
IC1DD TL1451ACNS SWR CONTROL
Q2DD XN4601(5C) DRIVER
Q1DD 2SB926 SW
D1DD SB07-03C
CN1DD
49.6V
GND
C5V
C9V
C15V
C-9V
C5V
PB
5V ADJ.
PROT.
TRIAN. GEN
V. REF
D2DD 1SS181
Q4DD 2SA1344 CAMERA SW
Q5DD 2SC3397 CAMERA SW
Q3DD 2SC3397 CAMERA SW
T1DD
D3DD 1SS294
Q8DD 2SB709 SW
IC2DD M5236ML REG DRIVER
15V ADJ.
D4DD SB07-03C
IC3DD AN79L09 VOLT. STAB.
D5DD MA221
To ENCODER PG206
DC-DC CONVERTER P.C.B

CAPSTAN MOTOR DRIVE SCHEMATIC (Reference)

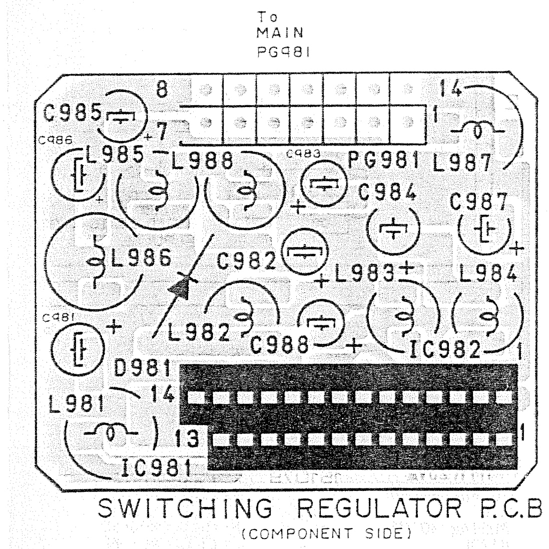

CN1CM
CAPST. FWD
B+(CAPST.)
GND(MOTOR)
5V4
GND
B+(SENSOR)
T. REEL
CAPST. FG
To MOTOR DRIVE PG704
Q2CM 2SB1188R (BCR) MOTOR DRIVE
Q1CM 2SB1188R (BCR) MOTOR DRIVE
Q3CM 2SB1188R (BCR) MOTOR DRIVE
IC1CM TA7745F CAPST. MOTOR DRIVE
3-φ DRIVER
3-φ LOGIC
IC3CM NJL5161K TAKE-UP REEL SENSOR
IC2CM μPC358 CAPST. FG BUF
MR1CM MR SENSOR
CAPSTAN MOTOR P.C.B

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

SWITCING REGURATOR SCHEMATIC

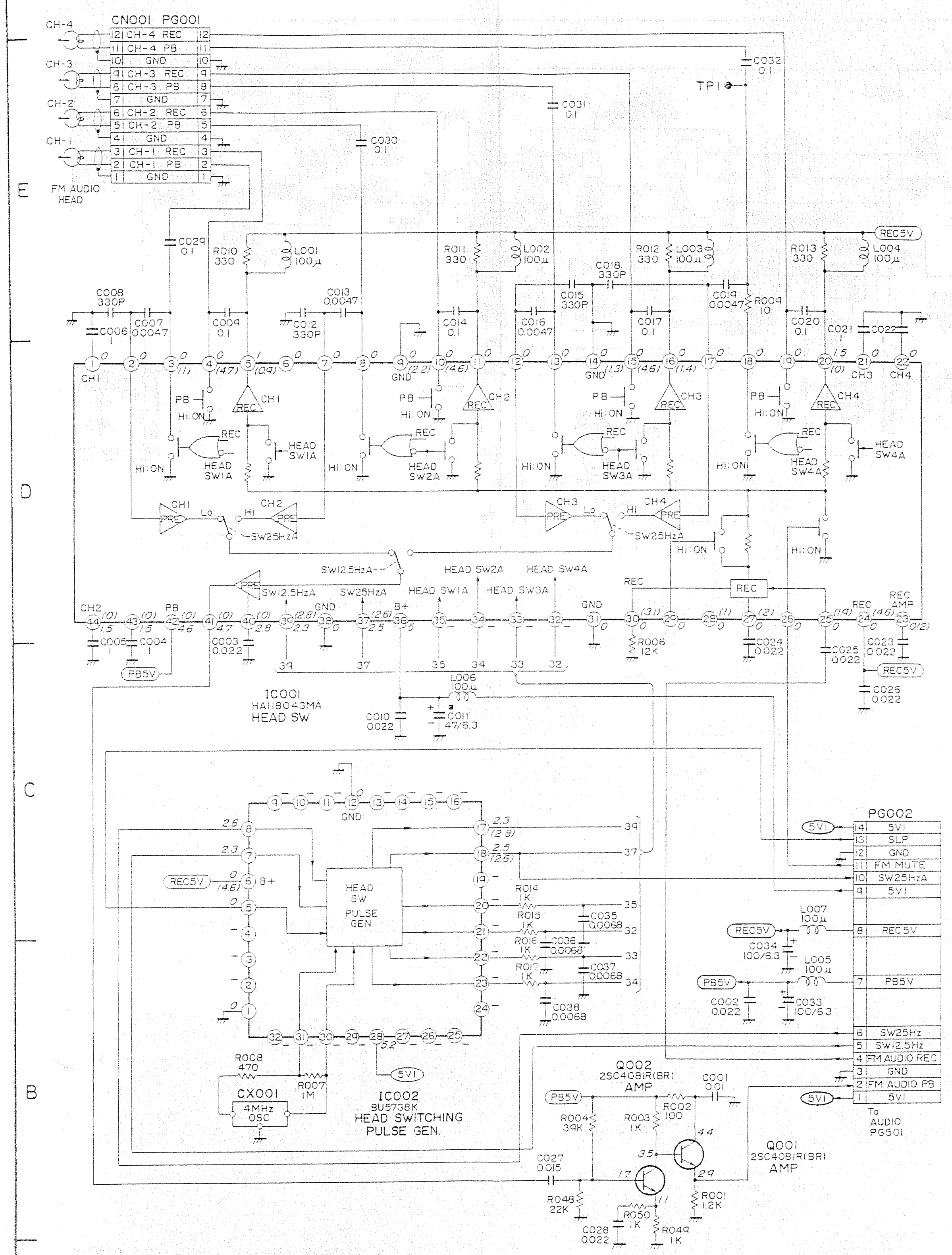

IC981 HN7176B SWR
IC982 HN7177B AMP/LPF
CAPST PWM
CYL PWM
10V PWM
5V PWM
TRI-ANGLE OSC
AMP
D981 ERA81-004
PG981
49.6V
PB/REC5V
B+(CAPST.)
B+(CYL.)
9.6V1
9.6V2
5V1
GND
10.2V
CYL FB
CAPST SERVO
To REGULATOR PG481
SWITCHING REGULATOR P.C.B

SWITCING REGURATOR CIRCUIT BOARD


To MAIN PG981
C985
C986
L985
L988
C983
PG981
L987
C984
C987
L986
C982
L983
L984
C981
L982
C988
IC982
D981
L981
IC981
8
7
14
1
13
SWITCHING REGULATOR P.C.B
(COMPONENT SIDE)

▨ : Soldered side

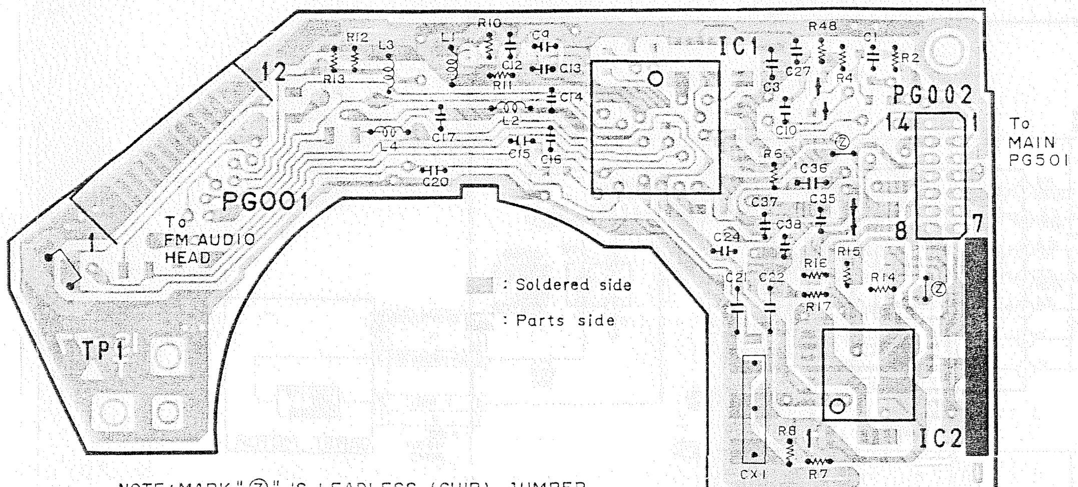
FM AUDIO SCHEMATIC


CN001 PG001
CH-4 REC
CH-4 PB
GND
CH-3 REC
CH-3 PB
CH-2 REC
CH-2 PB
CH-1 REC
CH-1 PB
FM AUDIO HEAD
TP1
REC5V
PB5V
IC001
HA118043MA
HEAD SW
HEAD SW PULSE GEN
CX001
4MHz OSC
IC002
BU5738K
HEAD SWITCHING PULSE GEN.
Q002
2SC4081(BR)
AMP
Q001
2SC4081(BR)
AMP
PG002
5V1
SLP
GND
FM MUTE
SW25HzA
REC5V
PB5V
SW25Hz
SW12.5Hz
FM AUDIO REC
FM AUDIO PB
To AUDIO PG501

FM AUDIO P.C.B

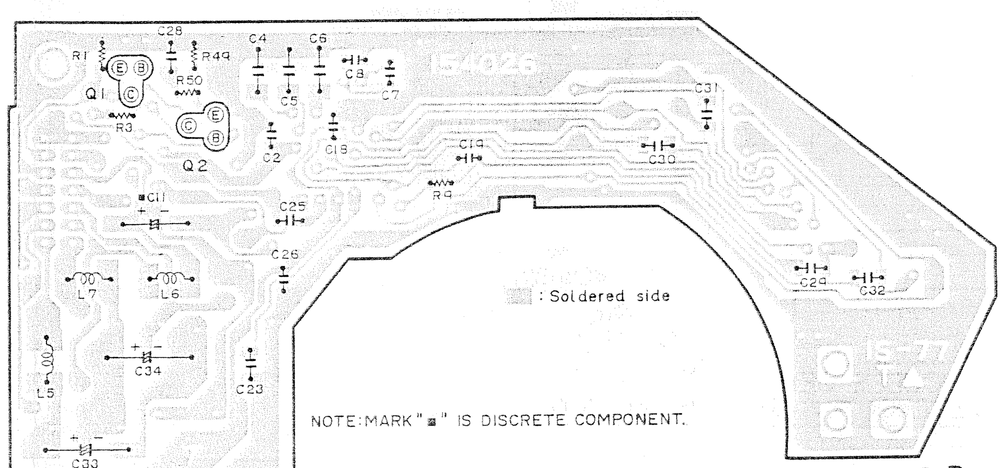
SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS-LED	5-22	MOTOR DRIVE	5-43
AUDIO	5-31	MIC	5-48
CAPUSTAN MOTOR	5-45	PROCESS	5-11
CONTROL	5-19	PRE AMP	5-33
CHROMA	5-37	REGULATOR	5-27
DC-DC CONVERTER	5-46	SENSOR	5-7
ENCODER	5-15	SERVO	5-25
ELECTRONIC VIEWFINDER(EVF)	5-20	SYSTEM CONTROL	5-23
FM AUDIO	5-47	SWITCING REGULATOR	5-46
FOCUS SENSOR	5-21	TITLER	5-17
FUNCTION SW	5-27	TROUBLE DET	5-45
LUMINANCE	5-35		

FM AUDIO CIRCUIT BOARD


IC1
IC2
PG001
To FM AUDIO HEAD
PG002
To MAIN PG501
TP1
▨ : Soldered side
▨ : Parts side

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

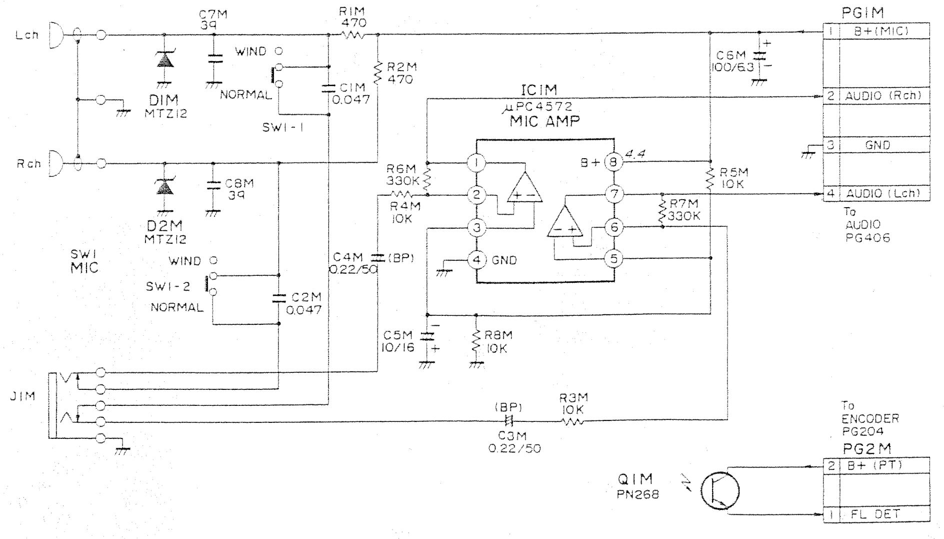
FM AUDIO P.C.B
(COMPONENT SIDE)


Q1
Q2
▨ : Soldered side

NOTE: MARK "■" IS DISCRETE COMPONENT.

FM AUDIO P.C.B
(SOLDER SIDE)

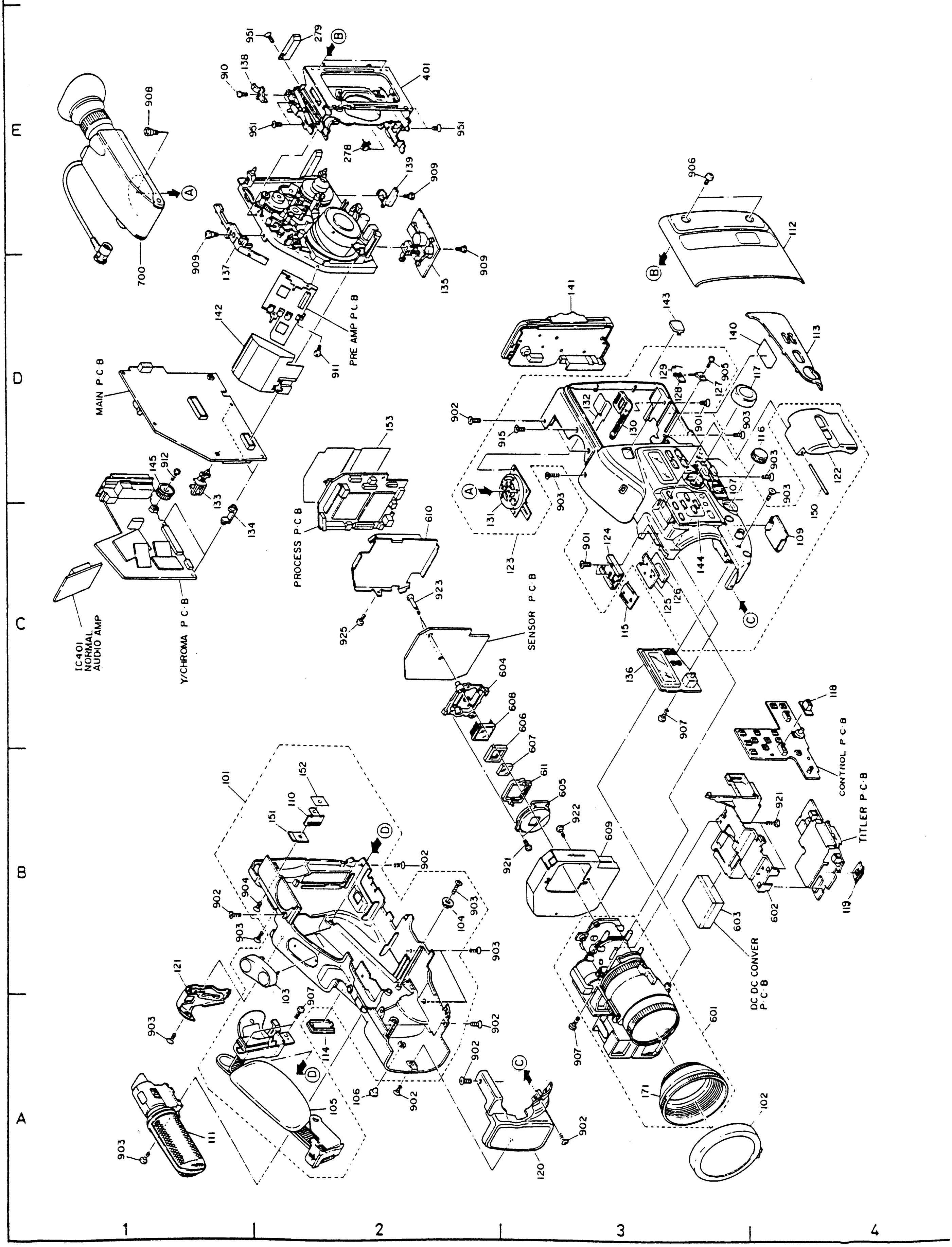
MIC SCHEMATIC (Reference)


Lch
Rch
D1M MTZ12
D2M MTZ12
WIND
NORMAL
SW1-1
SW1-2
SW1 MIC
IC1M
μPC4572
MIC AMP
J1M
PG1M
B+(MIC)
AUDIO (Rch)
GND
AUDIO (Lch)
To AUDIO PG406
To ENCODER PG204
PG2M
B+ (PT)
FL DET
Q1M
PN268

MIC P.C.B

CHAPTER 6 EXPLODED VIEW

-CABINET SECTION


E
D
C
B
A
1
2
3
4
908
700
A
951
279
B
910
138
401
951
951
278
139
909
909
137
135
909
906
112
B
PRE AMP P.C.B
142
911
MAIN P.C.B
141
143
140
113
129
905
117
128
127
902
132
130
901
903
116
915
122
153
A
131
903
107
903
903
150
145
912
133
134
PROCESS P.C.B
610
123
901
124
144
109
SENSOR P.C.B
126
125
115
C
923
925
IC401 NORMAL AUDIO AMP
Y/CHROMA P.C.B
136
604
608
606
607
611
605
907
118
CONTROL P.C.B
101
152
110
151
D
902
922
921
609
921
TITLER P.C.B
902
904
903
104
903
603
602
119
121
103
907
903
DC DC CONVER P.C.B
903
114
902
601
D
105
106
902
902
C
907
171
102
111
903
120
902

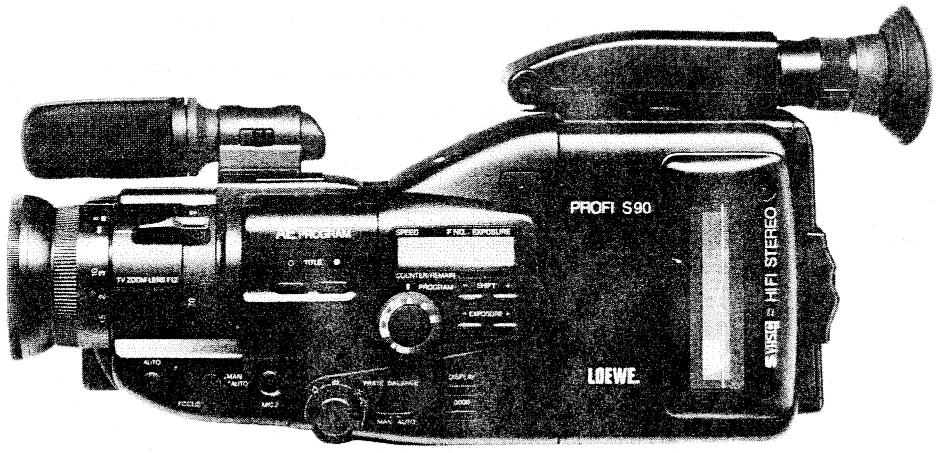
V06446

LOEWE.

Kundendienst-Serviceanleitung

(Service Manual)

S VHS C
625



LOEWE-Camcorder Profi S 90 Art.-Nr. 68590

SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safely related characteristics, always use genuine LOEWE replacement parts.
   Especially critical parts in the power circuit block should not be replaced with other makers.
   Critical parts are marked with ⚠ in the circuit diagram and printed wiring board.
2. Before returning a repaired unit to the customer, the service technican must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SICHERHEITSMASSNAHMEN

Bei Wartungsarbeiten sind die folgenden Sicherheitsmaßnahmen zu beachten:

1. Da verschiedene Teile dieses Gerätes Sicherheitsfunktionen aufweisen, nur Original-LOEWE-Ersatzteile verwenden.
   Kritische Teile im Netzteil sollten nicht durch ähnliche Teile anderer Hersteller ersetzt werden. Alle kritischen Teile sind im Schaltplan und im Diagramm der Schaltplatinen mit dem Symbol ⚠ gekennzeichnet.
2. Vor der Auslieferung eines reparierten Gerätes an den Kunden muß der Wartungstechniker das Gerät einer gründlichen Prüfung unterziehen, um sicherzustellen, daß sicherer Betrieb ohne die Gefahr von elektrischen Schlägen gewährleistet ist.

230-90165.900

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Telefon (0 92 61) 990. Telex 642 620.
Telefax 0 92 61/9 94 13
Telegramm loewevideo.
Bildschirmtext *50 705 # (Info).
*50 705990 # (ET-Best.).

CONTENTS

CHAPTER 1

IDENTIFICATION AND OPERATION OF CONTROLS 1-1

CHAPTER 2 DISASSEMBLY

1. CASE REMOVAL 2-1
  1-1. Grip Cover 2-1
  1-2. Electronic Viewfinder (EVF) .. 2-1
  1-3. Accessory Shoe 2-2
  1-4. Cassette Lid 2-2
  1-5. Microphone 2-2
  1-6. Right Case 2-2
  1-7. Front Cover 2-3
  1-8. Left Case 2-3
2. CIRCUIT BOARD/TAPE TRANSPORT MECHANISM REMOVAL 2-4
  2-1. LCD Unit 2-4
  2-2. Function Switch 2-4
  2-3. Battery Jack Circuit Board (IC401) 2-4
  2-4. Autofocus Circuit Board 2-4
  2-5. Zoom Switch 2-5
  2-6. Luma/Chroma Circuit Board 2-5
  2-7. Control Circuit Board 2-5
  2-8. Process Circuit Board 2-6
  2-9. Sensor Circuit Board 2-6
  2-10. Titler Circuit Board 2-7
  2-11. DC-DC Converter 2-7
  2-12. Main Circuit Board 2-7
  2-13. Preamp Circuit Board 2-7
  2-14. Tape Transport Mechanism 2-8
MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (TOP VIEW) 2-8
MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (BOTTOM VIEW) 2-9
3. MAIN MECHANICAL COMPONENTS REMOVAL 2-9
  3-1. Cassette Holder and S-VHS Tape Switch 2-9
  3-2. Cylinder (Upper Cylinder/ Lower Cylinder) and FM Audio Circuit Board 2-10
  3-3. Audio/Control (A/C) Head 2-10
  3-4. End Sensor 2-11
  3-5. Cassette Holder Switch 2-11
  3-6. Dew Sensor 2-11
  3-7. Motor Drive Circuit Board (Safety Tab Switch, Supply Reel Sensor, End Lamp) 2-11
  3-8. Mechanism State Switch 2-12
  3-9. Loading Motor 2-12
  3-10. Capstan Motor (Take-up Reel Sensor, Capstan FG Sensor) ... 2-12
  3-11. Impedance Roller 2-12
  3-12. Take-up Guide Pole 2-13
  3-13. Supply Guide Roller 2-13
  3-14. Take-up Guide Roller 2-13
  3-15. Take-up Brake 2-14
  3-16. Supply Reel Disk 2-14
  3-17. Take-up Reel Gear 2-14
  3-18. Take-up Gear 2-14
  3-19. Tension Arm and Tension Band 2-15
  3-20. Centre Gear Block 2-15
  3-21. A/C Head Arm 2-15
  3-22. Middle Guide Arm 2-15
  3-23. Pressure Roller 2-16
  3-24. Supply Guide Roller Base 2-16
  3-25. Take-up Guide Roller Base 2-16
  3-26. Supply Guide Roller Rail 2-16
  3-27. Loading Gear Block 2-17
  3-28. Take-up Loading Ring Holders (1)/(2) 2-17
  3-29. Supply Loading Ring Holder ... 2-17
  3-30. Take-up Guide Roller Rail 2-18
  3-31. Loading Gear (2) 2-18
  3-32. Supply Loading Ring 2-18
  3-33. Take-up Loading Ring 2-18
  3-34. Catcher Block and Full Erase (FE) Head 2-19
  3-35. Cylinder Base 2-19
  3-36. Synchro Gear 2-19
  3-37. Pressure Roller Arm and Pressure Roller Control Arm 2-20
4. LENS BLOCK REMOVAL 2-20
  4-1. Lens Block 2-20
  4-2. Zoom Motor 2-20
  4-3. Focus Motor 2-21
  4-4. Iris Motor 2-21
5. ELECTRONIC VIEWFINDER (EVF) REMOVAL
  5-1. Bottom Case 2-21
  5-2. Top Case 2-21
  5-3. Electronic Viewfinder (EVF) Circuit Board 2-22
  5-4. CRT 2-22

6. TABLE OF FLAT PACKAGE ICS, /SOLDERING IRON TIPS 2-22

JIGS AND TAPES FOR ADJUSTMENT 3-1

CHAPTER 3 MECHANICAL ADJUSTMENT

1. PHASE MATCHING OF TAKE-UP/SUPPLY LOADING RINGS AND LOADING GEAR BLOCK IN ASSEMBLY 3-1
2. MECHANISM STATE SWITCH PHASE MATCHING IN ASSEMBLY 3-2
3. CONFIRMATION OF UNLOADING POSITION 3-2
4. MIDDLE GUIDE ARM ASSEMBLING PHASE MATCHING 3-3
5. TAPE TRANSPORT SYSTEM COMPONENTS CHECK/ADJUSTMENT 3-3
  5-1. TENSION POLE POSITION ADJUSTMENT/TENSION ADJUSTMENT 3-3
  5-2. TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT 3-3
  5-3. GUIDE ROLLER HEIGHT ADJUSTMENT 3-4
  5-4. A/C HEAD ADJUSTMENT 3-4
6. ADJUSTMENT AFTER REPLACING CYLINDER (VIDEO HEADS) 3-5
7. TORQUE CONFIRMATION 3-6
  7-1. TAKE-UP TORQUE CONFIRMATION .. 3-6
  7-2. REVERSE-SEARCH TORQUE CONFIRMATION 3-6
  7-3. REVERSE-SEARCH BRAKE TORQUE CONFIRMATION 3-6

CHAPTER 4 ELECTRICAL ADJUSTMENT

1. CONNECTIONS FOR ADJUSTMENT 4-1
2. CAMERA SECTION ADJUSTMENT 4-1
  2-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITION 4-1
  2-2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT 4-1
  2-3. ADJUSTMENT CONDITIONS 4-1
  2-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT 4-1
  2-5. LIST OF CHARTS FOR CAMERA ADJUSTMENT 4-2

2-6. CAMERA ADJUSTMENT 4-2
  1) Subcarrier Frequency Adjustment 4-2
  2) VCO Lock Adjustment 4-2
  3) Drive Pulse Frequency Adjustment 4-2
  4) Sensor Sub Voltage Adjustment 4-2
  5) Professional AE Adjustment ... 4-2
  6) Backfocus Adjustment 4-3
  7) Luminance Setup Adjustment ... 4-3
  8) AIC Level Adjustment 4-3
  9) Matrix Adjustment 4-4
  10) White Balance Control Position Adjustment 4-4
  11) Black Balance Adjustment 4-4
  12) White Balance Adjustment 4-4
  13) Burst Level Adjustment 4-5
  14) Auto White Balance Adjustment 4-5
  15) Chroma Level Adjustment 4-5
2-7. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT 4-5
  1) Deflection Yoke Position Adjustment 4-5
  2) EVF Centring Adjustment 4-6
  3) EVF Vertical Size Adjustment 4-6
  4) EVF Brightness Adjustment 4-6
  5) EVF Focus Adjustment 4-6
2-8. AUTOFOCUS ADJUSTMENT 4-6
  1) Sensor Position Adjustment ... 4-6
2-9. ADJUSTMENT USING THE VECTORSCOPE 4-7
2-10. ADJUSTMENT COMPONENTS LOCATIONS 4-7
3. VTR SECTION ADJUSTMENT 4-8
3-1. CIRCUIT BOARD LOCATION AND SERVICING POSITION 4-8
3-2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT 4-9
3-3. ADJUSTMENT CONDITIONS 4-9
3-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT 4-9
3-5. SYSTEM CONTROL SECTION 4-9
  1) Display Position Adjustment 4-9
3-6. SERVO SECTION 4-9
  1) Head Switching Point Adjustment 4-9
  2) Tracking Preset Adjustment ... 4-9
3-7. LUMA/CHROMA SECTION 4-10
  1) Record Luma/Chroma Level Adjustment 4-10
  2) 1H Delay Line Output Level Adjustment 4-10
3-8. AUDIO SECTION 4-11
  1) Audio Bias Level Adjustment 4-11
  2) Record FM Audio Level Adjustment 4-11
3-9. ADJUSTMENT COMPONENTS LOCATIONS 4-11

CHAPTER 5 SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS

WHEN USING THIS SERVICE REFERENCE MATERIAL 5-1
LEADLESS COMPONENT IDENTIFICATION .. 5-2
CIRCUIT BOARD CONNECTION DIAGRAM ... 5-5

	SCHEMATIC DIAGRAM	**CIRCUIT BOARD**
SENSOR	5-7	/ 5-9,10
PROCESS (PROCESS)	5-11	/ 5-13
PROCESS (ENCODER)	5-15	/ 5-13
TITLER	5-17	/ 5-16
CONTROL	5-19	/ 5-19
ELECTRONIC VIEWFINDER (EVF)	5-19	/ 5-20
FOCUS SENSOR	5-21	/ 5-21
LED	5-22	/ 5-21
AUTOFOCUS	5-22	/ 5-22
MAIN (SYSTEM CONTROL)	5-23	/5-27,29
MAIN (SERVO)	5-23	/5-27,29
MAIN (REGULATOR)	5-27	/5-27,29
FUNCTION SWITCH	5-27	
MAIN (AUDIO)	5-31	/5-27,29
PREAMP	5-33	/ 5-33
LUMINANCE/CHROMA (LUMINANCE)	5-35	/5-39,41
LUMINANCE/CHROMA (CHROMA)	5-37	/5-39,41
MOTOR DRIVE (MOTOR DRIVE)	5-43	/ 5-44
MOTOR DRIVE (TROUBLE DET.)	5-45	/ 5-44
CAPSTAN MOTOR	5-45	
DC-DC CONVERTER	5-46	
SWITCHING REGULATOR	5-46	/ 5-46
FM AUDIO	5-47	/ 5-48
MIC	5-48	

WAVEFORMS
  SENSOR 5-9
  PROCESS 5-12
  ELECTRONIC VIEWFINDER (EVF) 5-24
  MAIN (SERVO) 5-32
  PREAMP 5-42
  LUMINANCE/CHROMA 5-44

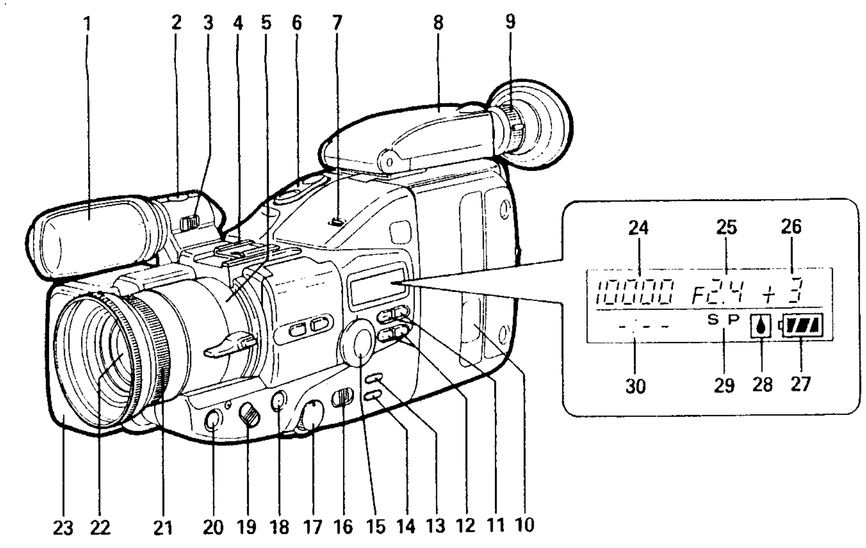
CHAPTER 6 EXPLODED VIEWS

CABINET SECTION 6-1
CHASSIS SECTION 6-2
LUBRICATION 6-2
ELECTRONIC VIEWFINDER (EVF) SECTION 6-3
LENS SECTION 6-3

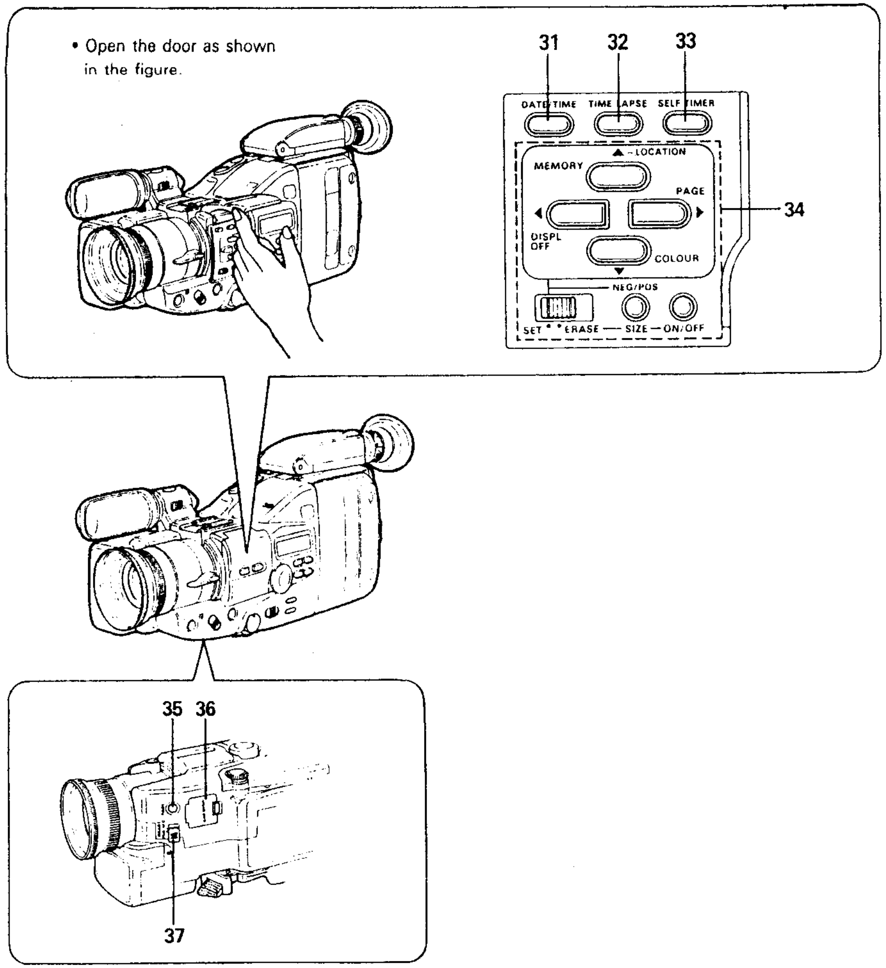
CHAPTER 7

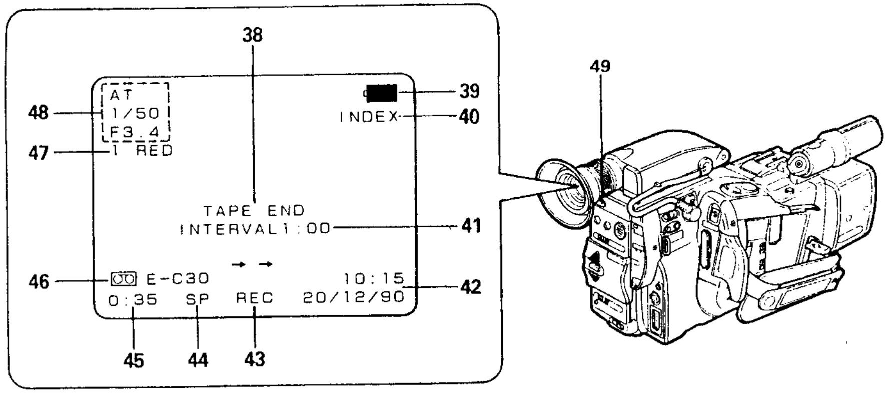
REPLACEMENT PARTS LIST 7-1

CHAPTER 1
IDENTIFICATION AND OPERATION OF CONTROLS

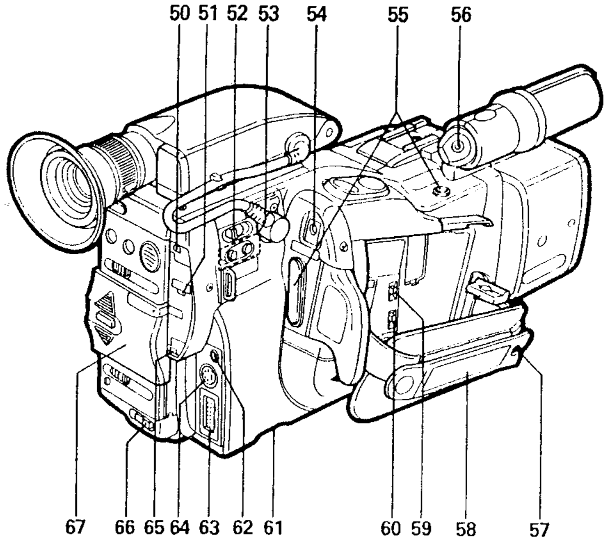


1. **Stereo Microphone**
   Sensitive to sounds coming from the direction in which the camera is pointed.
2. **60 Hz Detection Sensor**
   When a subject is shot under fluorescent lighting in areas where the power frequency is 60 Hz (in U.S.A., Canada, etc.) flickering occurs in the picture.
   When this sensor detects 60 Hz, it changes the shutter speed automatically so that no flickering occurs.
   NOTE: When a subject is shot under fluorescent lighting in areas where the power frequency is 50 Hz, the shutter speed is set to 1/50 automatically.
3. **MIC NORMAL/WIND Switch**
   This switch is used to reduce noise that occurs due to wind. Place the switch in the "NORMAL" position for normal use.
4. **Accessory Shoe**
   Used to attach a light weight video accessory to your camera/recorder.
   NOTE: Do not use this shoe to mount a camera light on the camera/recorder. Excessive heat from a light could damage the camera/recorder's case.
5. **Zoom Ring (Manual Zooming)**
   The picture size can be magnified 8 times with the use of the zoom feature. Just rotate the zoom ring for a close up (T) or wide angle (W) picture. Macro close-up, as close as 1 cm from object, is feasible.
6. **Power Zoom Switch**
   This switch performs zooming electrically.
   "W": Picture becomes wider gradually.
   "T": Picture becomes telescopic gradually.
7. **Record Indicator**
   Flashes for about 10 seconds when the SELF TIMER switch is pressed during record/pause (stand-by) mode and stays on to indicate recording starts. This also lights during normal recording.
8. **Electronic Viewfinder (EVF)**
   Displays what the camera/recorder lens sees. The electronic viewfinder also functions as a convenient black-and-white monitor during playback of recorded material.
9. **Diopter Control**
   To use the electronic viewfinder without eyeglasses on, turn this control knob for your optimum focus adjustment.
10. **Cassette Holder**
    Slide EJECT switch to open the cassette holder. Be aware of the cassette direction when inserting.
    NOTE: Power source must be connected to open the cassette holder.
11. **SHIFT Buttons (▲,▼)**
    When the MODE selector is set to "S", "D" or "M", use these buttons to set the shutter speed and F number.
12. **EXPOSURE Buttons (+,−)**
    Use these buttons to correct the exposure. When the MODE selector is set to "M", press these buttons to set the shutter speed.
13. **TAPE REMAIN/COUNTER Select Button**
    Use this button to switch the indications in the viewfinder and LCD panel.
    Pressing this button once will display the tape remaining of the cassette. Pressing twice will display the tape counter. Pressing a third time will cause counter memory mark "M" to appear. Press a fourth time to delete all displays from the viewfinder leaving the tape remaining display on the LCD panel as it is. Refer to page 30.
14. **RESET Button**
    When the tape counter is displayed in the viewfinder, pressing this button resets the counter to "0000"
15. **Shooting MODE Selector**
    Use this selector to select on of a number shooting modes. Set it to "AUTO" for usual shooting; the camera automatically controls the functions including the iris and focus, etc. See page 21 for details.
16. **WHITE BAL Switch**
    When this switch is in the "AUTO" position, the colour balance is set automatically. Place the switch in "MAN" position to adjust the colour balance to suit your personal preference.
17. **Manual White Balance Control**
    Use this control to adjust the colour balance manually. Set the WHITE BAL switch to "MAN", and while viewing colour monitor, adjust this control for a nature picture.
18. **NARRATION Button**
    Press and hold the button while shooting; you can also record a narrative via the built-in narration microphone while the button is depressed.
19. **AUTO/MAN FOCUS Switch**
    Set this switch to the "AUTO" position for automatic focusing, and to the "MAN" position for focusing with the focus ring.
20. **PUSH AUTO Focus Button**
    Auto focusing can be also performed during manual focus mode by pushing this button.
21. **Focus Ring**
    Do not attempt to manually turn the focus ring when the camera/recorder is in the auto focus mode.
22. **Lens**
    F1.2 (8.7 – 70 mm) 8:1 power zoom lens features with auto focus and auto iris functions.
23. **Auto Focus Window**
    To automatically focus the camera lens, this window transmits and receives infrared light which is reflected off the subject. Make sure you don't obstruct this window when recording.
24. **SHUTTER SPEED Indicator**
    Indicates the selected shutter speed.
25. **F No. Indicator**
    Indicates the selected F number.
26. **Exposure Correction Value Indicator**
27. **Battery Level Indicator**
    Indicates the battery condition.
    When the battery is fully charged, the display shows " ▰ ". When the battery is very nearly empty, the display shows " ▯ ". When " ▯ " starts blinking, you should find an alternative power source or recharge the battery.
28. **Dew Indicator**
    Indicates dew condensation on the camera/recorder mechanism. While this indicator appears, the unit will not operate. If this occurs, eject the tape and leave the power on. When the indicator goes off, the unit can be operated.
29. **Tape Speed Indicator (SP/LP)**
    Shows the recording speed during recording and playback.
30. **TAPE REMAIN/COUNTER Indicator**
    Shows the tape remaining or tape counter.

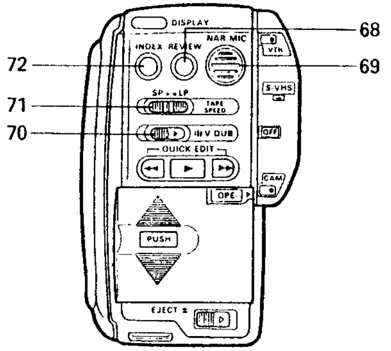

- Open the door as shown in the figure.



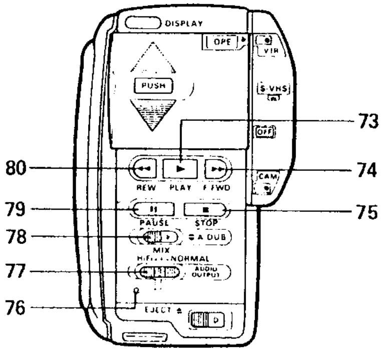
31. **DATE/TIME Button**
    Press this button to display the date and clock in the viewfinder. Whenever the date and clock appear in the viewfinder, they will be recorded on the tape.
32. **TIME LAPSE Button**
    This button allows time lapse and one shot recording.
33. **SELF TIMER Button**
    This button allows you to start recording after about 10 seconds when the button is pressed.
34. **Titler Buttons**
    Use these buttons to store a title in memory or recall the stored title and record it superimposed on the picture being shot. See page 31 for details.
35. **FADE Button**
    During recording you can add a professional touch to your recordings by fading in and out of scenes.
    NOTE: When you use FADE button to fade in and out, the sound will also fade in and out with the picture.
36. **Clock Battery Compartment**
    Pull the tab to open the cover and install the clock battery (provided).
37. **IMAGE Switch**
    Normally set it to "POS".
    Set to "NEG" for special effects as in a negative film.
38. **TAPE Indicator**
    When the record start/stop button is pressed, if a cassette without its safety tab is inserted or there is no cassete, "TAPE" appears for several seconds. When the tape reaches near the end during shooting, "TAPE END" flashes.
39. **Battery Level Indicator**
    Indicates the battery condition.
    When the battery is fully charged, the display shows " ▮▮▮ ". When the battery is very nearly empty, the display shows " ▮ ". When " ▮ " starts blinking, you should find an alternative power source or recharge the battery.
40. **INDEX Indicator**
    See page 29 for details.
41. **INTERVAL Indicator**
    Appears in the time lapse and one-shot recording modes.
42. **DATE/TIME Indicator**
    Indicate the date/clock during the record or record/pause (stand-by) mode. You can record the clock and/or date with object when recording.
43. **MODE Indicator**
    Indicates the operating modes;
    - "REC" appears during the record mode.
    - "REWIND" appears during the rewind mode.
    - "FASTFWD" appears during the fast forward mode.
44. **Tape Speed Indicator (SP/LP)**
    Shows the recording speed during recording and playback.
45. **TAPE REMAIN/COUNTER Indicator**
    Shows the tape remaining or tape counter.
46. **TAPE Indicator**
    - ▭ : Shows that a cassette is inserted.
    - **E-C30:** Shows the type of cassette tape.
47. **Title Indicator**
    Indicates the page and colour of the title.
48. **Shooting MODE Indicator**
    Indicates the shooting mode, shutter speed and F number.
49. **DISPLAY Button**
    Use this button to switch the display in the vewefinder on and off. Pressing the button once will cause the display to appear in the viewfinder and pressing it once more to fix the display. Press the button a third time to delete the display from the viewfinder.
    NOTE: Use the DATE/TIME button on the side panel to switch the date/time display on and off.



- **When Camera power is turned on**
(the mode shifter is slid down)



- **When VTR power is turned on.**
(the mode shifter is slid up)



50. **VTR Indicator**
Lights when the VTR power is turned on.

51. **S-VHS Indicator**
This indicator lights up when the camera/recorder is recording or playing back in the S-VHS mode. It does not light up when the camera/recorder is recording or playing back in the VHS mode.
NOTE: An S-VHS-C cassette must be used to record in the S-VHS format.

52. **MIC MIX (ON/OFF) Switch**
This switch lets you add additional comments (or music) to a tape while you are copying a tape from your camera/recorder onto another VTR.

53. **DATE/TIME Set Buttons**
These buttons are used to set the clock (time and date) in your camera/recorder so it can be recorded on your tapes for future reference.

54. **DC IN 9.6V Jack**
When using the AC adapter/charger, connect one end of the DC cord (provided) to this jack and the other end to "DC OUTPUT" of the AC adapter/charger. When using the car cord (optional), connect this jack and the car's cigarette lighter socket.

55. **Record Start/Stop Buttons**
These two buttons function in the entirely same way. Press either button in the camera mode to start recording. Press it again to set the camera/recorder to the record/pause (standby) mode.

56. **EXT. STEREO MIC Jack**
Connect an external microphone (Not supplied) here to record sound from the external microphone.
NOTE: Connecting an external microphone automatically switches off the built-in microphone.

57. **Lens Cap Tab**
Place the lens cap on this tab when you are ready to record a scene. The tab also prevents the lens cap from swinging around on its cord.

58. **Hand Strap**
Adjust to best fit to your hand.

59. **S-VHS Switch**
Use to select S-VHS or normal VHS for recording. It has no effect during playback. Normally set it to "AUTO". S-VHS indicator lights when the camera/recorder is recording or playing back in S-VHS mode.

60. **EDIT Switch**
When copying a tape onto another VTR, set this switch to "ON".
The copied tape will provide clearer picture.

61. **TRACKING Control**
Used when playing a tape recorded on another VTR. Adjust for best picture. At all other times leave it in the center position, which can be found as a small detent in the movement of the knob.

62. **HEADPHONE Jack**
Sound being recorded via the microphone or played back may be monitored by stereo ear receiver (provided) connected to this jack.

63. **AV OUT Jack**
Connect the audio/video output cable to this jack and to the audio and video inputs of your TV/monitor receiver. You may also connect the RF converter unit to this jack and your TV receiver.

64. **S VIDEO Out Jack**
Use this connector jack when you want to send the video signal out to the TV or the VTR having an S VIDEO IN jack.
NOTE: This connector allows you to take full advantage of the new S-VHS recording format.

65. **CAM Indicator**
Will light when the camera power is turned on.

66. **EJECT Switch**
Slide to insert or remove the cassette.

67. **Mode Shifter**
Uses this mode shifter to switch the camera power and VTR power on and off.

68. **REVIEW Button**
Used to review the last few seconds of the recorded segment in the record/pause mode.

69. **NARRATION MIC.**
You can record a narrative via this microphone together with the picture and sound. The operator's voice can be recorded via this microphone while the NARRATION button is held depressed.

70. **VIDEO DUB Switch**
This switch is used to record new video in place of existing video without erasing the audio.

71. **TAPE SPEED Switch (LP/SP)**
This switch selects the recording speed. "SP" provides the best picture quality but the shortest recording time (30 minutes with E-C30 tape).
"LP" provides slightly reduced picture quality, but longer recording time (1 hour with E-C30 tape).
NOTE: Tape speed switch has no effect during playback. When playing tapes, the tape speed is selected automatically.

72. **INDEX Button**
When this button is pressed during a recording, the camera/recorder records an invisible index mark on the tape.
This is useful later when the tape is played back in a VTR that features the indexing system called "VHS Index Search System" because you will be able to quickly locate each index mark.

73. **PLAY Button**
Used for playback of tape.
NOTE: When the camera/recorder is record/pause (stand-by) mode, pressing and holding this button will play the tape at normal.

74. **F.FWD Button**
Press this button during stop or rewind mode, and fast-forwarding starts. "FAST FWD" indication appears in the viewfinder whenever the tape counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the forward direction approximately 3 times faster than the normal speed (SP recorded tape) or 7 times faster than the normal speed (LP recorded tape) to confirm the recorded content. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
NOTE: You can also visually scan forward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.

75. **STOP Button**
The STOP button is used to stop playback, rewind, and fast forward operations. The STOP button has no effect during record operation.

76. **Hi-Fi Indicator**
Lights if the AUDIO OUTPUT select switch is set to "Hi-Fi" or "MIX" when a Hi-Fi recorded tape is played.

77. **AUDIO OUTPUT Select Switch**
Change over this switch to select the sound to be played back.
- **Hi-Fi:** Plays the stereo sound recorded on the Hi-Fi tracks.
- **MIX:** Plays the sound recorded on both the Hi-Fi and linear tracks.
- **NORMAL:** Plays the sound recorded on the linear tracks.

78. **AUDIO DUB Switch**
This switch is used to record new audio in place of existing audio without erasing the video.

79. **PAUSE Button**
This button is used to display a still picture during playback mode.

80. **REW Button**
Press this button during stop or fast forward mode, and fast-rewinding starts. "REWIND" indication appears in the viewfinder whenever the tape counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the rewind direction approximately 3 times faster than the normal speed (SP recorded tape) or 7 times faster than the normal speed (LP recorded tape) to confirm the recorded contents. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
NOTE: You can also visually scan backward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.

CHAPTER 2 DISASSEMBLY

1. CASE REMOVAL

1-1. Grip Cover

1. Remove one (1) screw holding the grip cover and remove the grip cover in the direction of the arrow. (See Fig. 2-1)

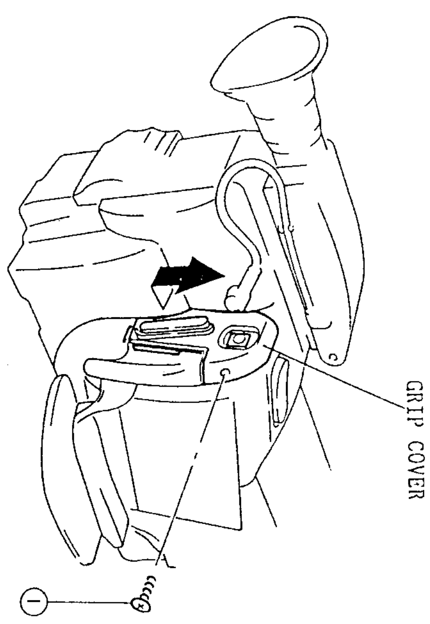


Fig. 2-1

1-2. Electronic Viewfinder (EVF)

1. Disconnect connector CN806.
(See Fig. 2-2).
2. Remove one (1) screw holding the EVF.

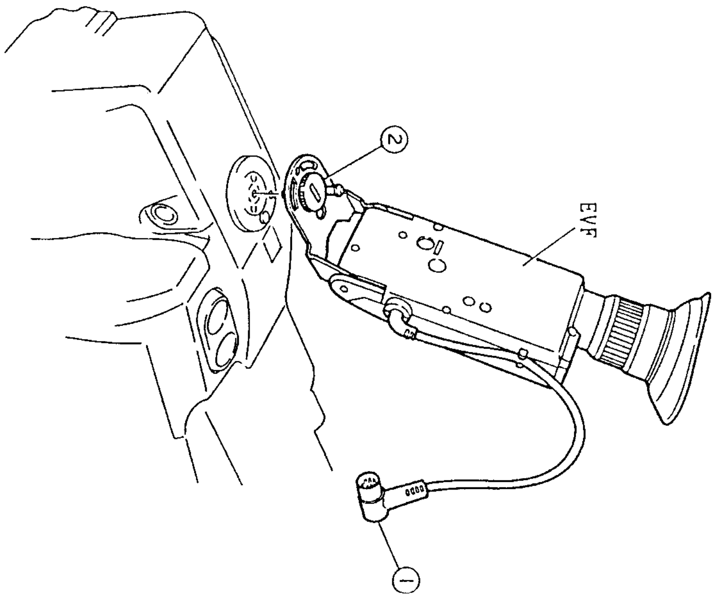


Fig. 2-2

1-3. Accessory Shoe

1. Insert a flat-bladed screwdriver, etc. into the hole in the accessory shoe spring and remove the shoe spring in the direction of the arrow. (See Fig. 2-3)
2. Remove two (2) screws holding the accessory shoe. (See Fig. 2-4)

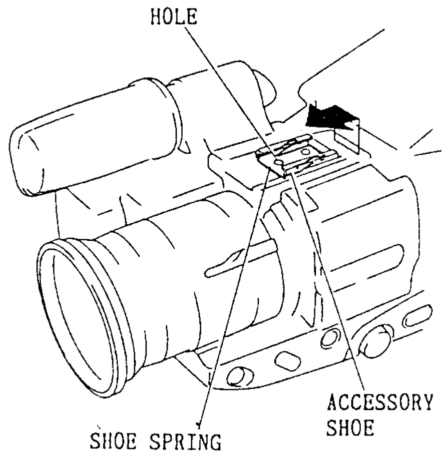


Fig. 2-3

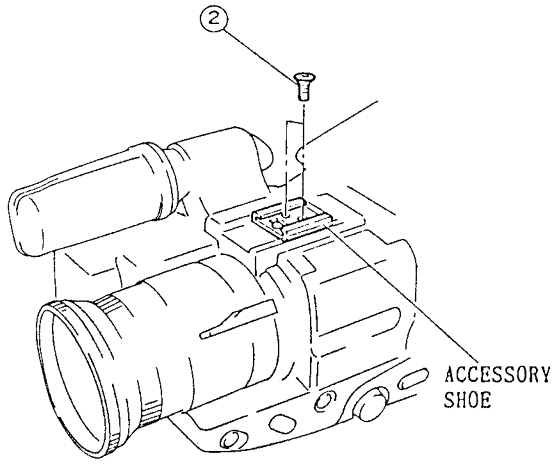


Fig. 2-4

1-4. Cassette Lid

1. Remove two (2) screws holding the cassette lid and remove the cassette lid in the direction of the arrow. (See Fig. 2-5)

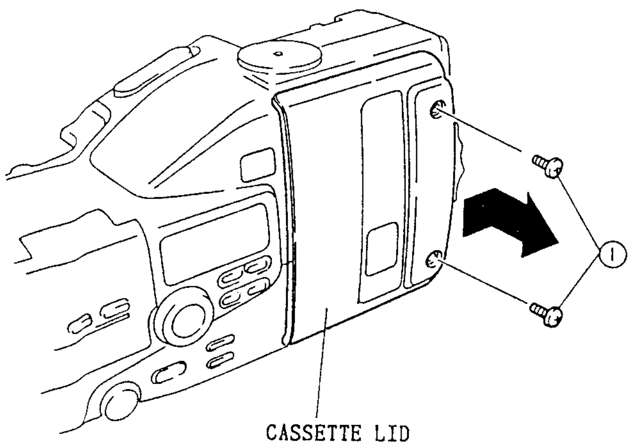


Fig. 2-5

1-5. Microphone

1. Remove one (1) screw holding the microphone and remove the microphone in the direction of the arrow. (See Fig. 2-6)
2. Disconnect two (2) connectors (CN001, CN002). (See Fig. 2-7)

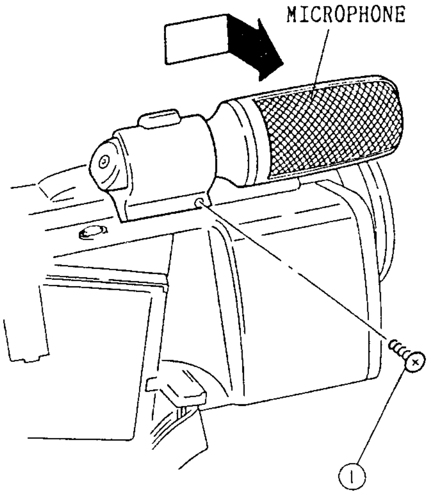


Fig. 2-6

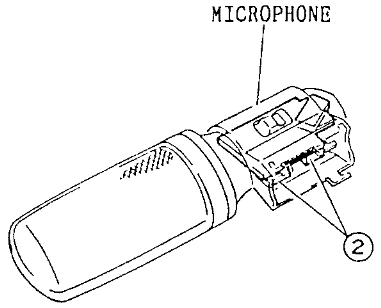


Fig. 2-7

1-6. Right Case

1. Remove the grip cover. (See Fig. 2-1)
2. Remove the EVF. (See Fig. 2-2)
3. Remove the accessory shoe. (See Figs. 2-3, 2-4)
4. Remove the microphone. (See Figs. 2-6, 2-7)
5. Remove five (5) screws holding the right case. (See Fig. 2-8)
6. Remove three (3) screws holding the right case. (See Fig. 2-9)
7. Disconnect two (2) connectors (PG1, PG2) and remove the right case in the direction of the arrow. (See Figs. 2-8, 2-9)

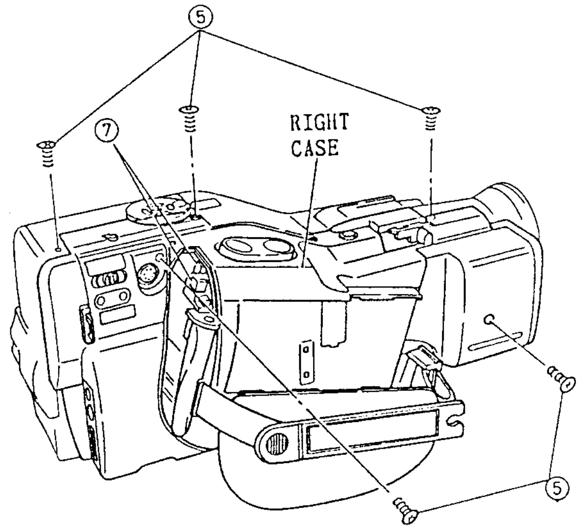


Fig. 2-8

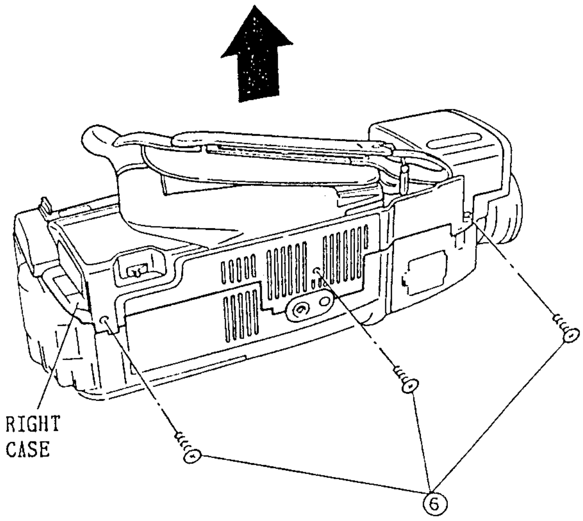


Fig. 2-9

1-7. Front Cover

1. Remove the grip cover. (See Fig. 2-1)
2. Remove the EVF. (See Fig. 2-2)
3. Remove the accessory shoe. (See Figs. 2-3, 2-4)
4. Remove the microphone. (See Figs. 2-6, 2-7)
5. Remove the right case. (See Figs. 2-8, 2-9)
6. Remove one (1) screw holding the front cover. (See Fig. 2-10)

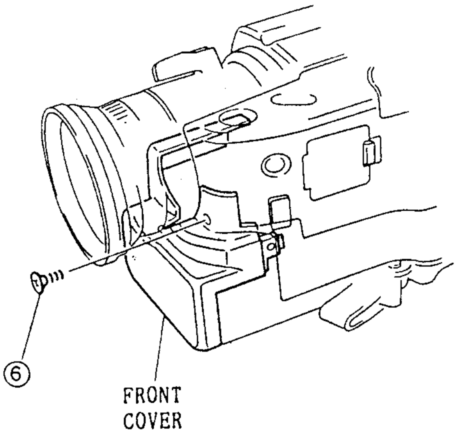


Fig. 2-10

1-8. Left Case

1. Remove the grip cover. (See Fig. 2-1)
2. Remove the EVF. (See Fig. 2-2)
3. Remove the accessory shoe. (See Figs. 2-3, 2-4)
4. Remove the cassette lid. (See Fig. 2-5)
5. Remove the microphone. (See Figs. 2-6, 2-7)
6. Remove the right case. (See Figs. 2-8, 2-9)
7. Remove the front cover. (See Fig. 2-10)
8. Remove three (3) screws holding the left case. (See Fig. 2-11)
9. Remove five (5) screws holding the left case. (See Fig. 2-12)
10. Open the luma/chroma circuit board. (See Fig. 2-20)
11. Disconnect connector CN005 on the main circuit board and remove the left case in the direction of the arrow. (See Figs. 2-12, 2-13)

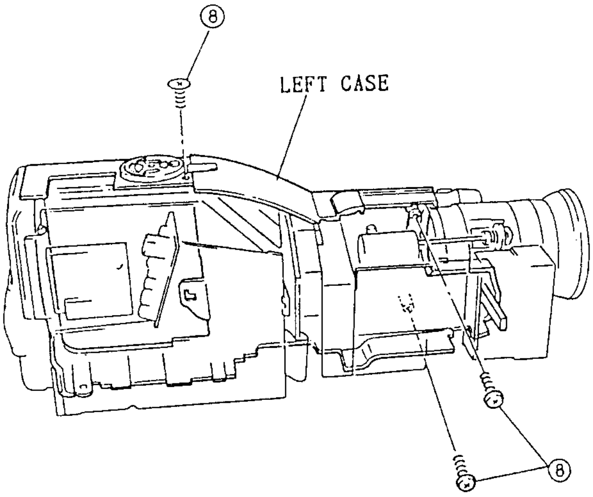


Fig. 2-11

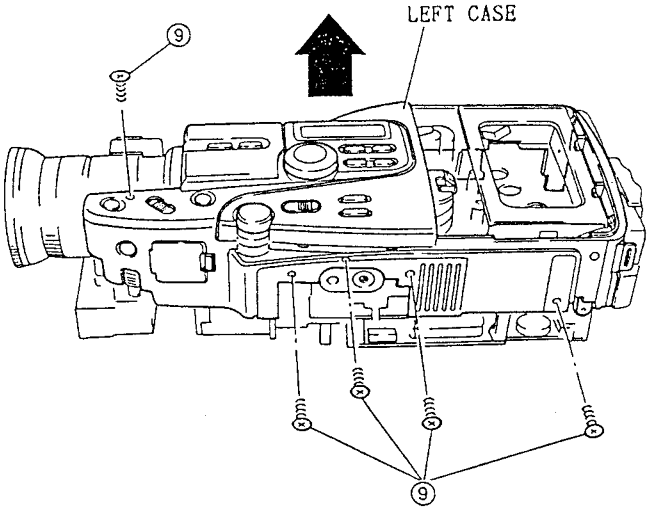


Fig. 2-12

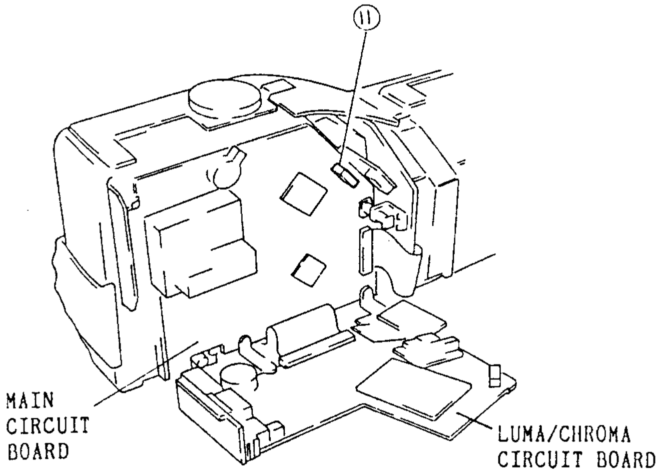

⑪
MAIN CIRCUIT BOARD
LUMA/CHROMA CIRCUIT BOARD

Fig. 2-13

2. CIRCUIT BOARD/TAPE TRANSPORT MECHANISM REMOVAL

Remove the right case as described previously.

2-1. LCD Unit

Remove the left case as described previously.

1. Remove one (1) screw holding the LCD unit. (See Fig. 2-14)
2. Release two (2) tabs and remove the LCD unit in the direction of the arrow.

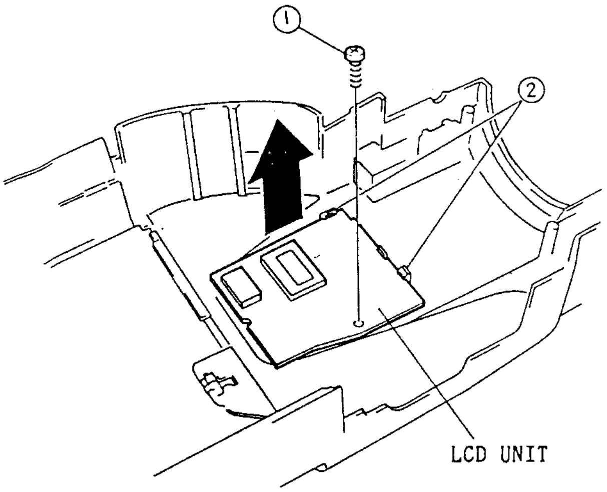


Fig. 2-14

2-2. Function Switch

Remove the left case as described previously.

1. Remove the function switch in the direction of the arrow. (See Fig. 2-15)

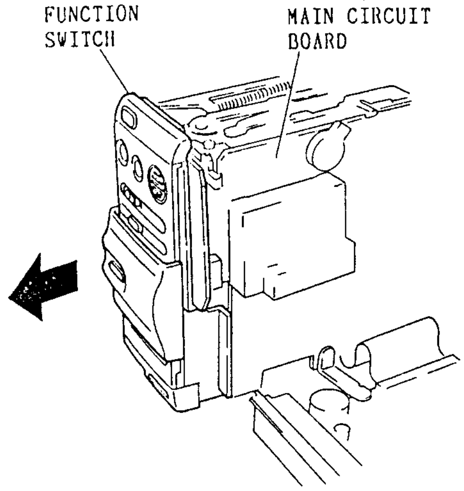

FUNCTION SWITCH
MAIN CIRCUIT BOARD

Fig. 2-15

2-3. Battery Jack Circuit Board (IC401)

1. Pull out the battery jack circuit board (IC401) in the direction of the arrow from the main circuit board. (See Fig. 2-16)

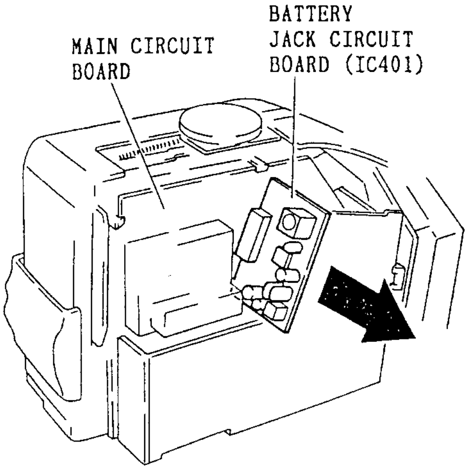

MAIN CIRCUIT BOARD
BATTERY JACK CIRCUIT BOARD (IC401)

Fig. 2-16

2-4. Autofocus Circuit Board

1. Remove one (1) screw and open the autofocus circuit board in the direction of the arrow. (See Fig 2-17)
2. Disconnect four (4) connectors (CN1A, CN2A, CN3A, CN4A). (See Fig. 2-18)
3. Unsolder two (2) connectors (CN01, CN02).

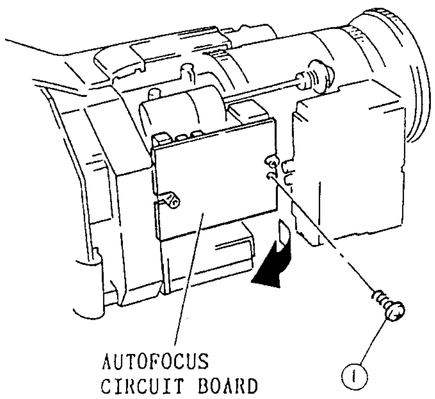

AUTOFOCUS CIRCUIT BOARD
①

Fig. 2-17

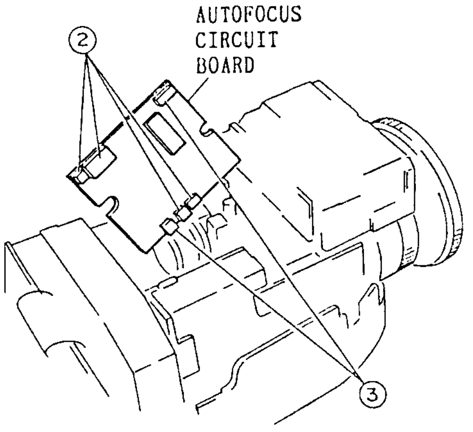

AUTOFOCUS
CIRCUIT
BOARD
②
③

Fig. 2-18

2-5. Zoom Switch

1. Release four (4) tabs and remove the zoom switch from the right case.

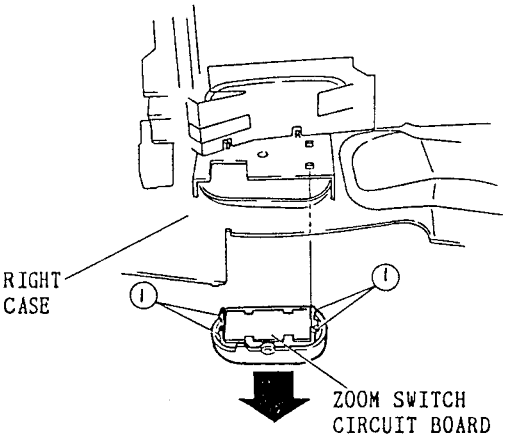

RIGHT
CASE
①
①
ZOOM SWITCH
CIRCUIT BOARD

Fig. 2-19

2-6. Luma/Chroma Circuit Board

1. Release two (2) tabs, and while disconnecting connector CN202 from the preamp circuit board, open the luma/chroma circuit board in the direction of the arrow. (See Fig. 2-20)
2. Disconnect three (3) connectors (CN010, CN012, CN013) and one (1) flat cable (CN009). (See Fig. 2-21)
3. Release two (2) tabs of the circuit board holder and remove the luma/chroma circuit board. (See Fig. 2-20)

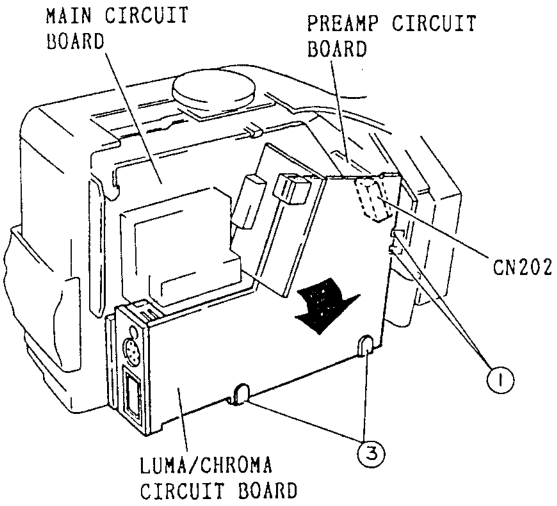

MAIN CIRCUIT
BOARD
PREAMP CIRCUIT
BOARD
CN202
①
③
LUMA/CHROMA
CIRCUIT BOARD

Fig. 2-20

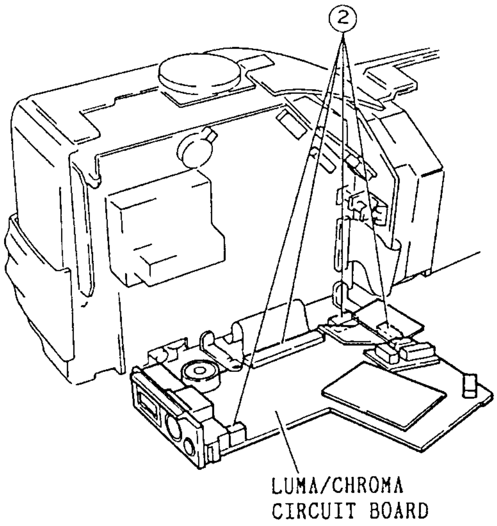

②
LUMA/CHROMA
CIRCUIT BOARD

Fig. 2-21

2-7. Control Circuit Board

Remove the left case as described previously.

1. Release one (1) tab, and while disconnecting connector CN403 from the titler circuit board, remove the control circuit board in the direction of the arrow. (See Fig. 2-22)
2. Disconnect two (2) connectors (CN006, CN302). (See Fig. 2-23)

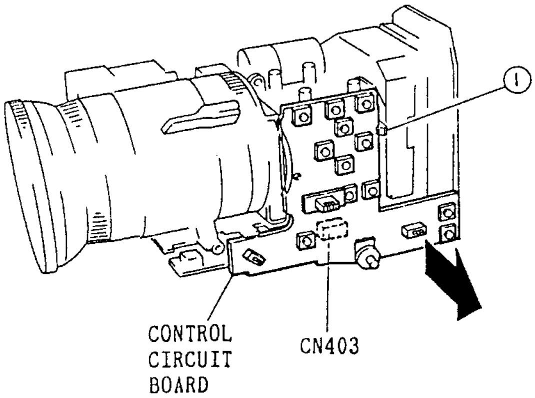

①
CONTROL
CIRCUIT
BOARD
CN403

Fig. 2-22

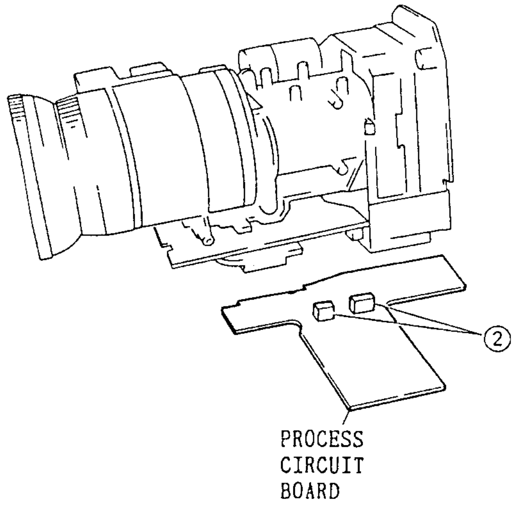

②
PROCESS
CIRCUIT
BOARD

Fig. 2-23

2-8. Process Circuit Board
Remove the left case as described previously.

1. Open the luma/chroma circuit board. (See Fig. 2-20)
2. Disconnect five (5) connector (CN004, CN006, CN007, CN010, CN013) and one (1) flat cable (CN008). (See Fig. 2-24)
3. While disconnecting two (2) connectors (CN201, CN208) from the sensor circuit board, open the process circuit board in the direction of the arrow. (See Fig. 2-25)
4. Disconnect six (6) connectors (CN001, CN007, CN202, CN203, CN211, CN 401). (See Fig. 2-26)

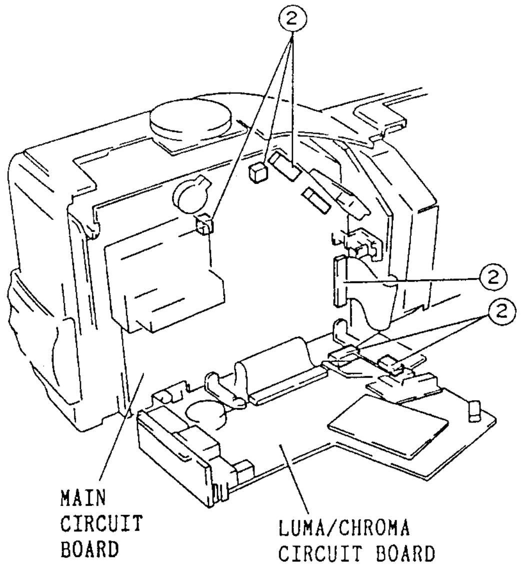

②
②
②
MAIN
CIRCUIT
BOARD
LUMA/CHROMA
CIRCUIT BOARD

Fig. 2-24

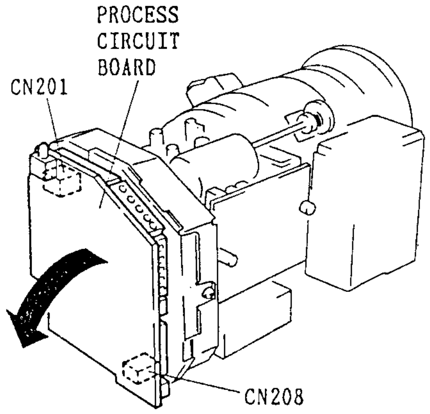

PROCESS
CIRCUIT
BOARD
CN201
CN208

Fig. 2-25

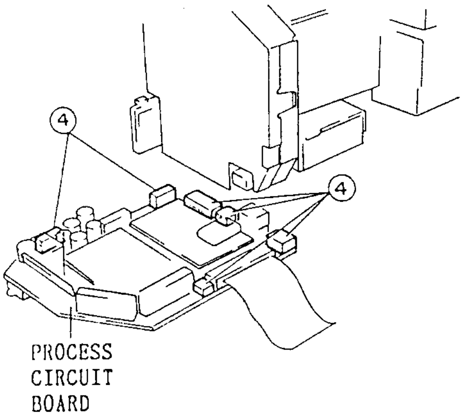

④
④
PROCESS
CIRCUIT
BOARD

Fig. 2-26

2-9. Sensor Circuit Board
Remove the left case as described previously.

1. Open the luma/chroma circuit board. (See Fig. 2-20)
2. Remove the process circuit board. (See Figs. 2-24, 2-25, 2-26)
3. Remove one (1) screw holding the sensor shield cover in the direction of the arrow. (See Fig. 2-27)
4. Remove the sensor shield cover in the direction of the arrow.
5. Remove two (2) screws holding the sensor circuit board. (See Fig. 2-28)

Note: When reinstalling the sensor circuit board, tighten two screws holding the sensor evenly.

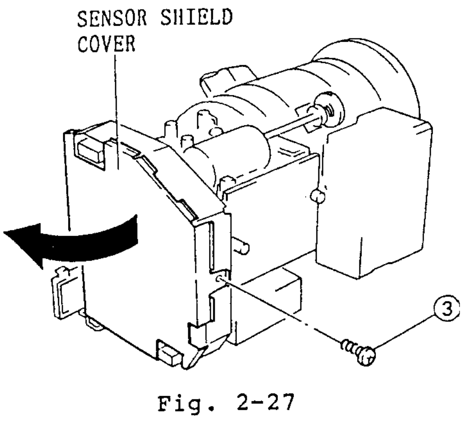

SENSOR SHIELD
COVER
③

Fig. 2-27

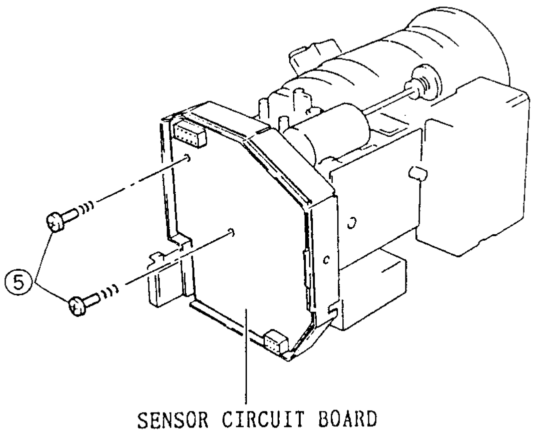

⑤
SENSOR CIRCUIT BOARD

Fig. 2-28

2-10. Titler Circuit Board

Remove the left case as described previously.

1. Remove the control circuit board. (See Figs. 2-22, 2-23)
2. Disconnect three (3) connectors (CN004, CN013, CN401). (See Fig. 2-29)
3. Release (2) tabs and remove the titler circuit board in the direction of the arrow.

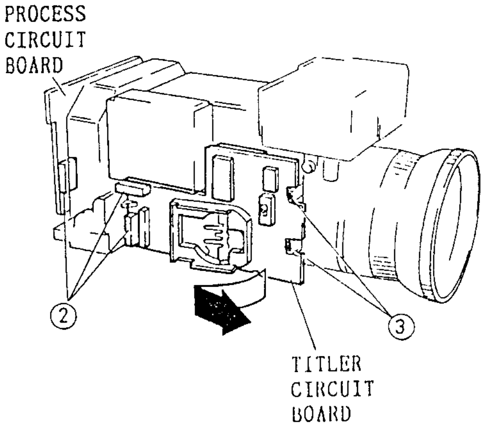

PROCESS
CIRCUIT
BOARD
②
③
TITLER
CIRCUIT
BOARD

Fig. 2-29

2-11. DC-DC Converter

Remove the left case as described previously.

1. Disconnect connector CN206 on the process circuit board. (See Fig. 2-30)
2. Release one (1) tab and pull out the DC-DC converter in the direction of the arrow.

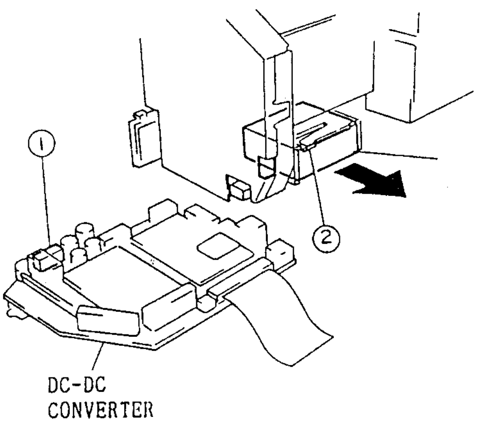

①
②
DC-DC
CONVERTER

Fig. 2-30

2-12. Main Circuit Board

Remove the left case as described previously.

1. Remove the battery jack circuit board (IC401). (See Fig. 2-16)
2. Open the luma/chroma circuit board. (See Fig. 2-20)
3. Pull out the function switch in the direction of the arrow from the main circuit board. (See Fig. 2-31)
4. Disconnect seven (7) connectors (CN002, CN004, CN006, CN007, CN012, CN401, CN402) and one (1) flat cable (CN804).
5. Release two (2) tabs, and while disconnecting two (2) connectors (CN501, CN801) from the motor drive circuit board and FM audio circuit board, remove the main circuit board in the direction of the arrow. (See Fig. 2-31)
8. Release two (2) tabs of the circuit board holder and remove the main circuit board.

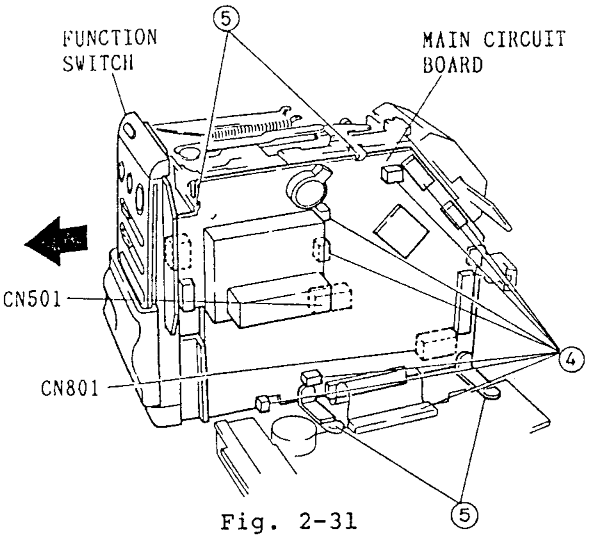

FUNCTION
SWITCH
⑤
MAIN CIRCUIT
BOARD
CN501
CN801
④
⑤

Fig. 2-31

2-13. Preamp Circuit Board

Remove the left case as described previously.

1. Open the luma/chroma circuit board. (See Fig. 2-20)
2. Release two (2) tabs and remove the preamp shield cover. (See Fig. 2-32)
3. Disconnect connector CN101.
4. Remove one (1) screw holding the preamp shield case. (See Fig. 2-33)

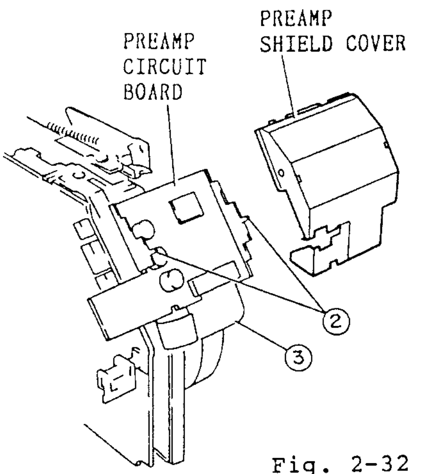

PREAMP
CIRCUIT
BOARD
PREAMP
SHIELD COVER
②
③

Fig. 2-32

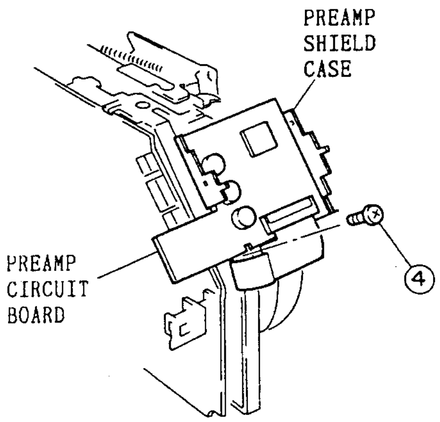

PREAMP
SHIELD
CASE
PREAMP
CIRCUIT
BOARD
④

Fig. 2-33

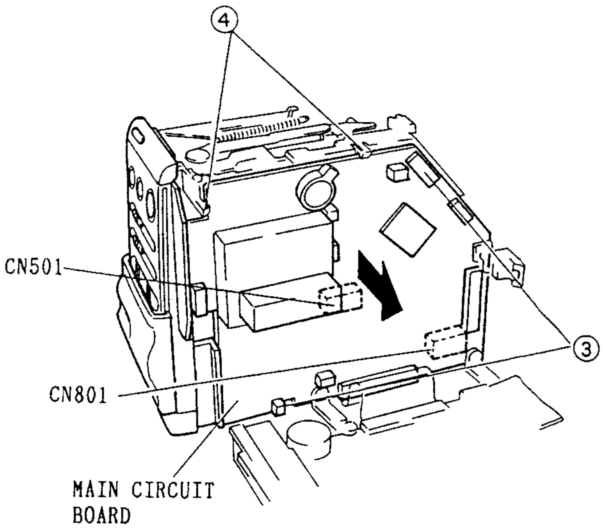

④
CN501
③
CN801
MAIN CIRCUIT
BOARD

Fig. 2-34

2-14. Tape Transport Mechanism
Remove the left case as described previously.

1. Open the luma/chroma circuit board. (See Fig. 2-19)
2. Remove the preamp circuit board. (See Figs. 2-32, 2-33)
3. Disconnect two (2) connectors (CN401, CN402). (See Fig. 2-34)
4. Release two (2) tabs, and after disconnecting two (2) connectors (CN501, CN801) from the motor drive circuit board and FM audio circuit board, remove the main circuit board in the direction of the arrow.

MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (TOP VIEW)

1. Cylinder Brush
2. Upper Cylinder
3. Take-up Guide Pole
4. Audio/Control (A/C) Head
5. Plate Spring
6. X-Value Adjustment Nut
7. Pressure Roller
8. Take-up Loading Ring
9. Middle Guide Arm
10. Take-up Reel Gear
11. Take-up Gear
12. Supply Loading Ring
13. Take-up Brake
14. Centre Gear Block
15. End Lamp
16. Take-up Guide Roller
17. Loading Gear Block
18. Tension Band
19. Supply Reel Disk
20. Safety Tab Switch
21. Loading Motor
22. Tension Arm
23. Supply Guide Roller
24. End Sensor
25. Impedance Roller
26. Full Erase (FE) Head
27. Catcher Block

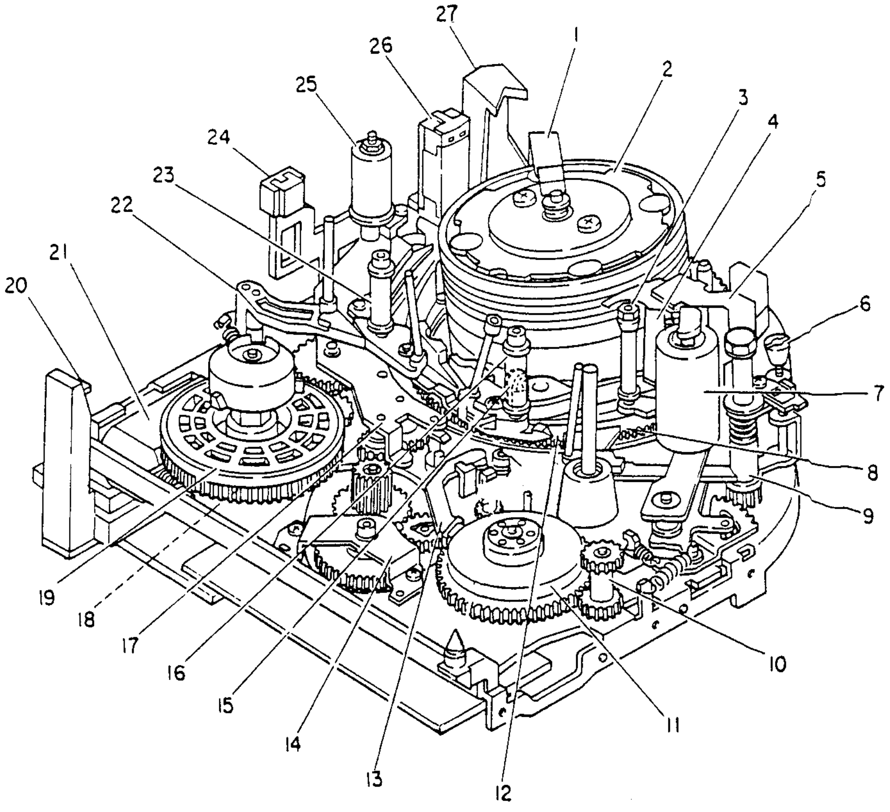

27
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Fig. 2-35

MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (BOTTOM VIEW)

1. Lower Cylinder
2. Mechanism State Switch
3. Motor Drive Circuit Board
4. Capstan Belt
5. Capstan Motor
6. FM Audio Circuit Board

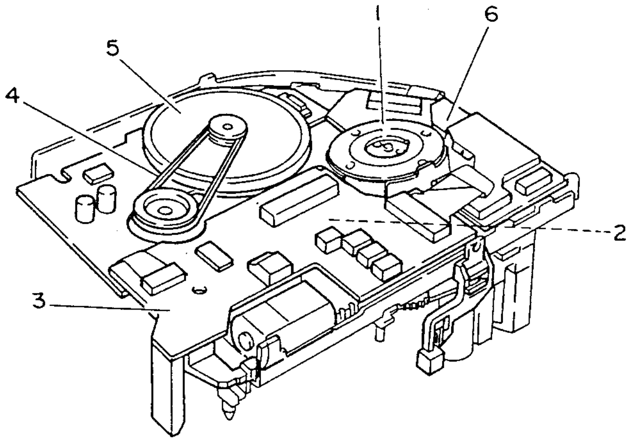


Fig. 2-36

3. MAIN MECHANICAL COMPONENTS REMOVAL

Reinstall the components by the reverse procedure to removal when no caution items are given. Remove the mechanism section as described previously.

3-1. Cassette Holder and S-VHS Tape Switch

1. Disconnect two (2) connectors (CN554, CN558) on the motor drive circuit board. (See Fig. 2-51)
2. Remove one (1) screw holding the S-VHS tape switch. (See Fig. 2-51-1)
3. Move the cassette holder lock lever in the direction of the arrow to lift up the cassette holder. (See Fig. 2-52)
4. Remove four (4) screws holding the cassette holder and remove the holder together with the holder switch from the chassis. (See Figs. 2-52, 2-53)

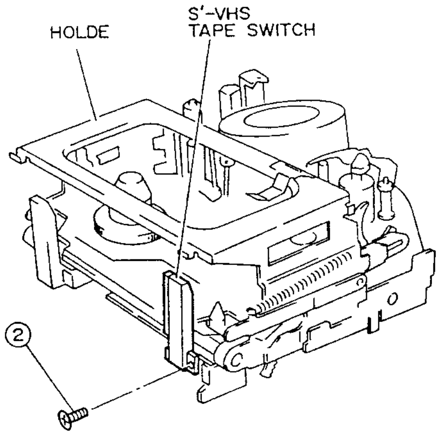

HOLDE
S'-VHS
TAPE SWITCH
②

Fig. 2-51-1

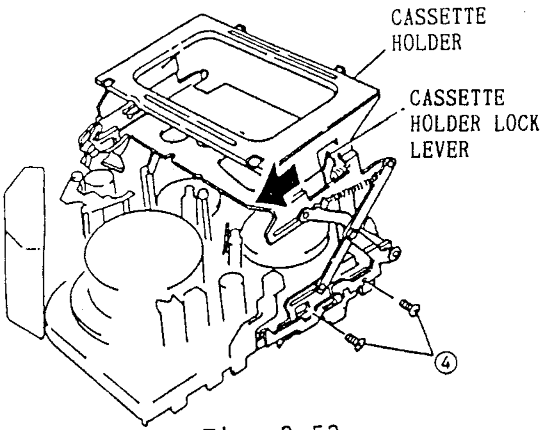

CASSETTE
HOLDER
CASSETTE
HOLDER LOCK
LEVER
④

Fig. 2-52

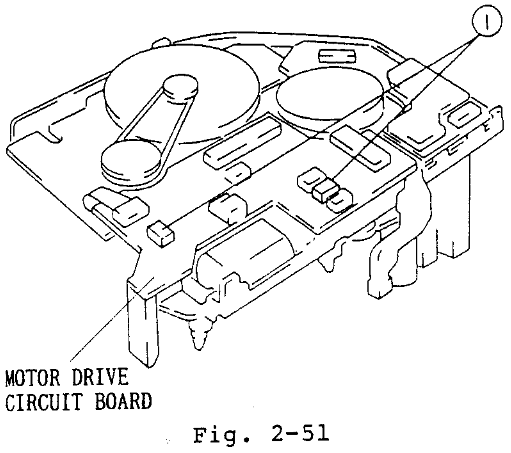

①
MOTOR DRIVE
CIRCUIT BOARD

Fig. 2-51

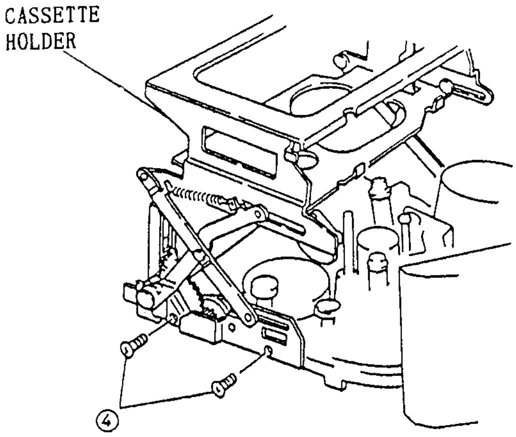

CASSETTE
HOLDER
④

Fig. 2-53

3-2. Cylinder (Upper Cylinder/Lower Cylinder) and FM Audio Circuit Board

Upper Cylinder

1. Remove one (1) screw holding the cylinder brush. (See Fig. 2-54)
2. Remove two (2) screws holding the upper cylinder.
3. Unsolder eighteen (18) points on the upper cylinder and pull out the upper cylinder from the lower cylinder. (See Fig. 2-55)

FM Audio Circuit Board and Lower Cylinder

4. Disconnect one (1) flat cable (CN001) on the FM audio circuit board. (See Fig. 2-55-1)
5. Remove one (1) screw holding the FM audio circuit board.
6. Disconnect flat cable CN552. (See Fig. 2-55-2)
7. Remove three (3) screws holding the lower cylinder.

Note: Do not touch the video head tips with your fingers or tools during the work.
Since the upper cylinder uses connectors, pull it out at right angles to the axis of rotation of the cylinder.
Tighten the two (2) screws holding the upper cylinder evenly.
Reinstall the cylinder brush so its contact comes into contact with the center of the cylinder shaft.
Adjust as follows after installing the upper cylinder.
* CHAPTER 3
6. ADJUSTMENT AFTER REPLACING CYLINDER (VIDEO HEAD)

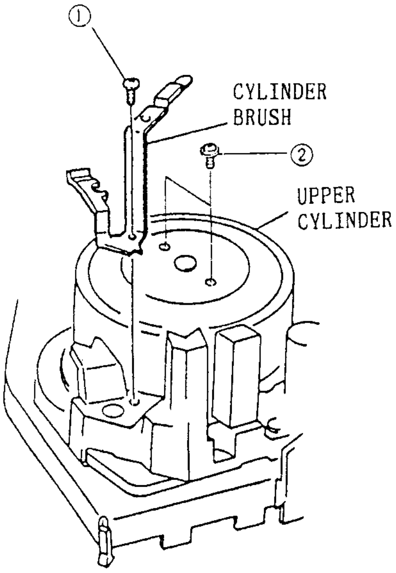


Fig. 2-54

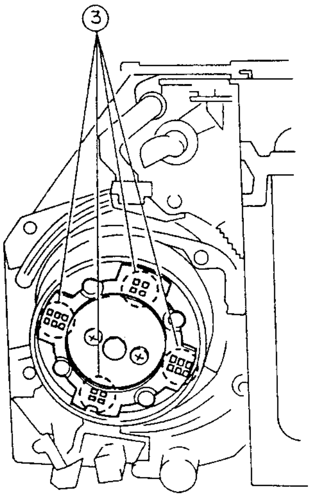


Fig. 2-55

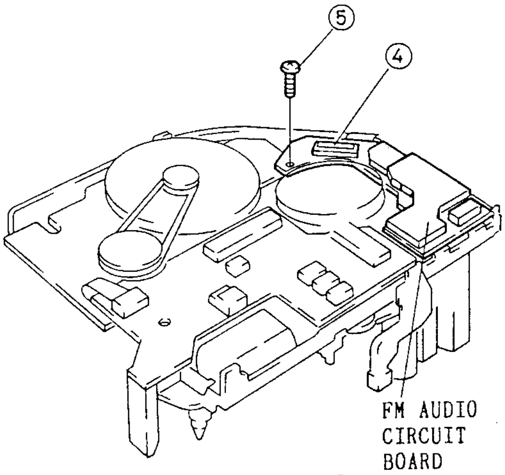


Fig. 2-55-1

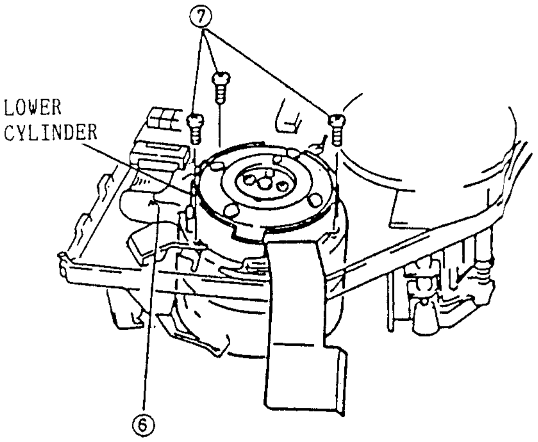


Fig. 2-55-2

3-3. Audio/Control (A/C) Head

1. Remove one (1) nut holding the plate spring. (See Fig. 2-56)
2. Remove three (3) screws holding the A/C head.

Note: Adjust as follows after installing the A/C head.
* CHAPTER 3
5-4. A/C HEAD ADJUSTMENT

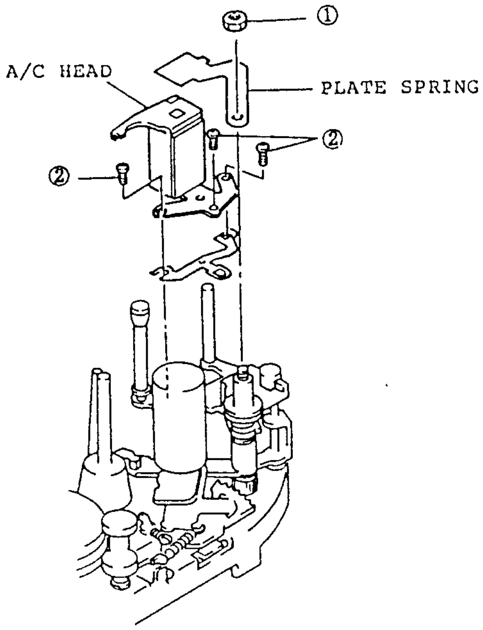

①
A/C HEAD
PLATE SPRING
②
②

Fig. 2-56

3-4. End Sensor

1. Disconnect connector CN556.
   (See Fig. 2-57)
2. Remove one (1) screw holding the end sensor. (See Fig. 2-58)

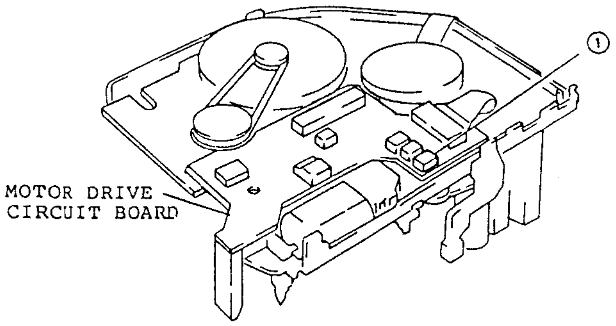

①
MOTOR DRIVE
CIRCUIT BOARD

Fig. 2-57

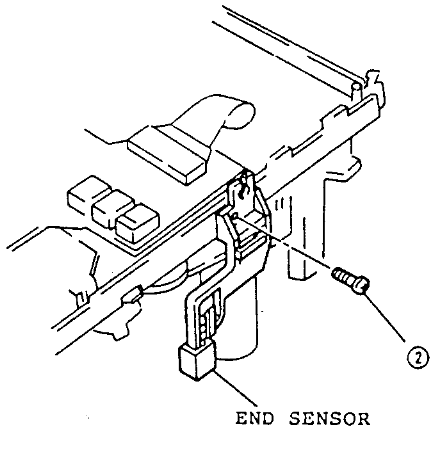

②
END SENSOR

Fig. 2-58

3-5. Cassette Holder Switch

1. Disconnect connector CN554.
   (See Fig. 2-59)
2. Release two (2) tabs on the cassette holder switch. (See Fig. 2-60)

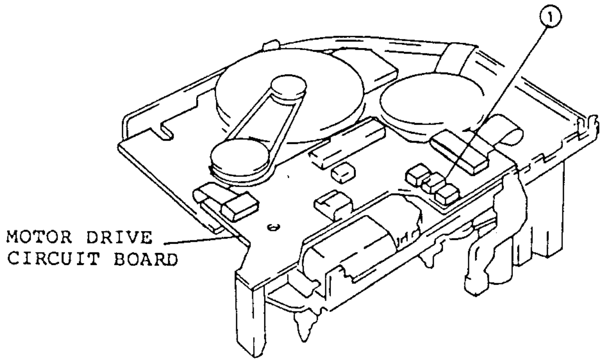

①
MOTOR DRIVE
CIRCUIT BOARD

Fig. 2-59

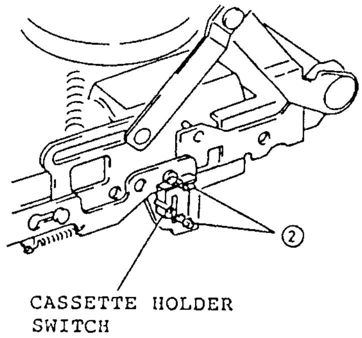

②
CASSETTE HOLDER
SWITCH

Fig. 2-60

3-6. Dew Sensor

1. Remove one (1) screw holding the dew sensor. (See Fig. 2-61)

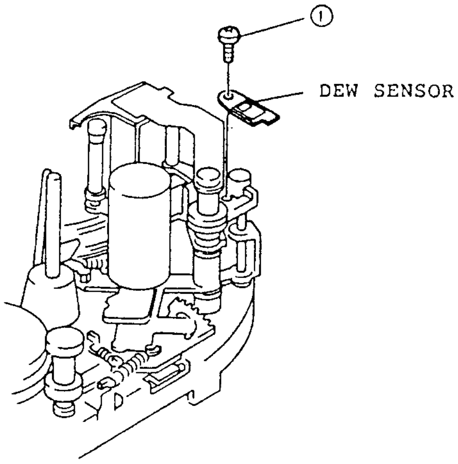

①
DEW SENSOR

Fig. 2-61

3-7. Motor Drive Circuit Board (Safety Tab Switch, Supply Reel Sensor, End Lamp)

1. Disconnect five (5) connectors (CN554, CN555, CN556, CN557, CN558).
   (See Fig. 2-62)
2. Disconnect two (2) flat cables (CN552, CN553).
3. Remove three (3) screws holding the motor drive circuit board.

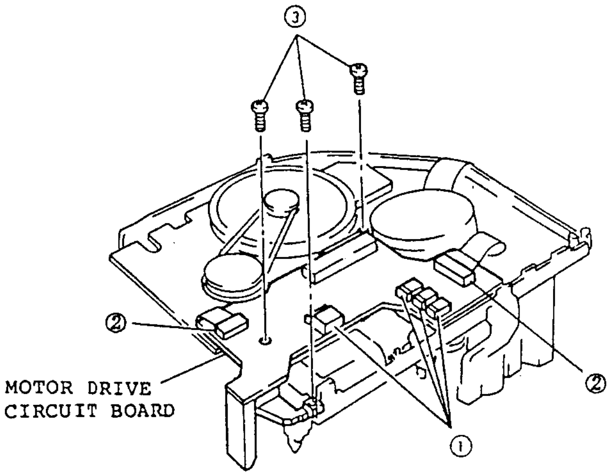


Fig. 2-62

3-8. Mechanism State Switch

1. Remove the motor drive circuit board. (See Fig. 2-62)
2. Remove two (2) screws holding the mechanism state switch. (See Fig. 2-63)

Note: Adjust as follows after installing the mechanism state switch.
 * CHAPTER 3
 2. MECHANISM STATE SWITCH PHASE MATCHING IN ASSEMBLY.

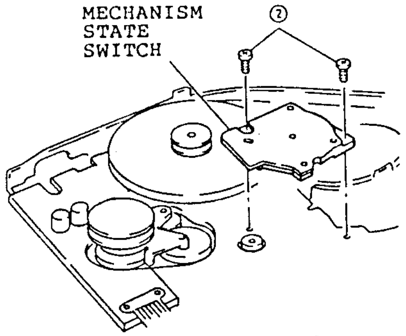


Fig. 2-63

3-9. Loading Motor

1. Remove the motor drive circuit board. (See Fig. 2-62)
2. Remove two (2) screws holding the loading motor. (See Fig. 2-64)

Note: Be careful that the loading gear (1) comes off when the loading motor is removed.

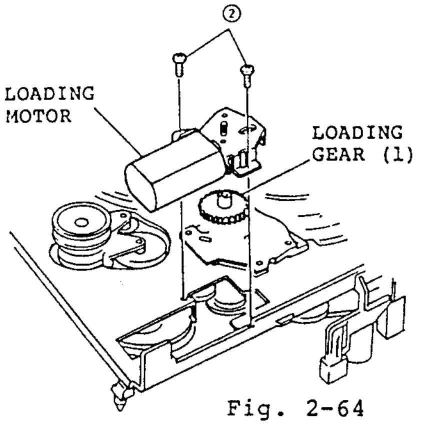


Fig. 2-64

3-10. Capstan Motor (Take-up Reel Sensor, Capstan FG Sensor)

1. Remove the motor drive circuit board. (See Fig. 2-62)
2. Remove the capstan belt. (See Fig. 2-65)
3. Remove three (3) screws holding the capstan motor while moving the middle guide arm in the direction of the arrow. (See Fig. 2-66)

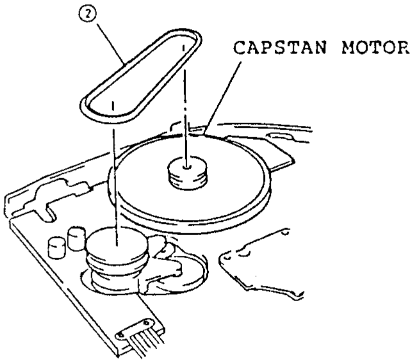


Fig. 2-65

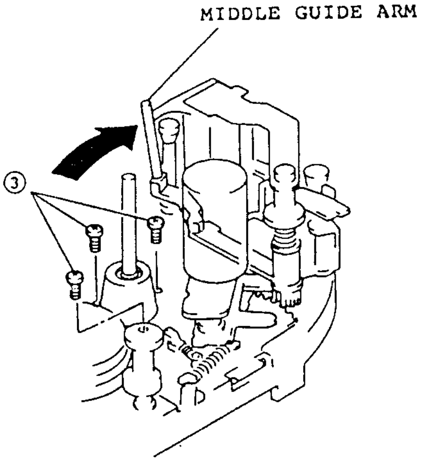


Fig. 2-66

3-11. Impedance Roller

1. Remove one (1) nut holding the impedance roller and pull out the roller from the chassis. (See Fig. 2-67)

Note: Be careful that the impedance roller sleeve, three washers and the flange come off when the impedance roller is removed. When reinstalling the impedance roller, be sure to put two specified washers (0.25 and 0.13 mm thick) between the chassis (loading gear block) and flange. Tighten the fixing nut until it stops.

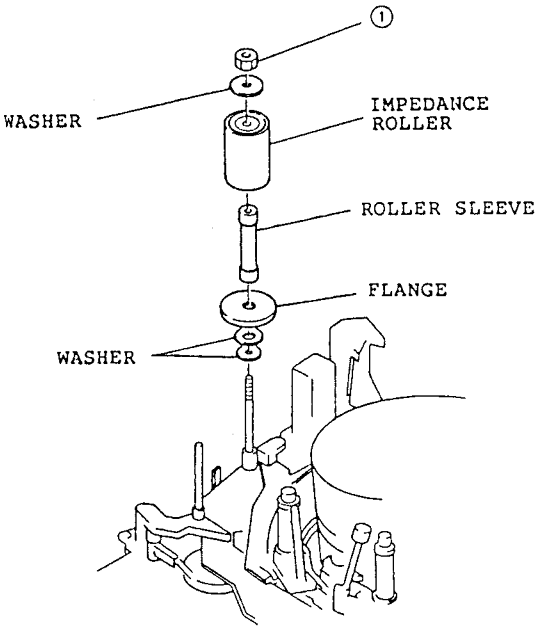


Fig. 2-67

3-12. Take-up Guide Pole

Note: As the take-up guide pole provides a reference for the tape transport system, do not remove it without sufficient reason.
Adjust as follows after installing the take-up guide pole.
* CHAPTER 3
5-2. TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT

1. Loosen the nut at the top of the take-up guide pole and pull out the pole from the chassis.
(See Fig. 2-68)

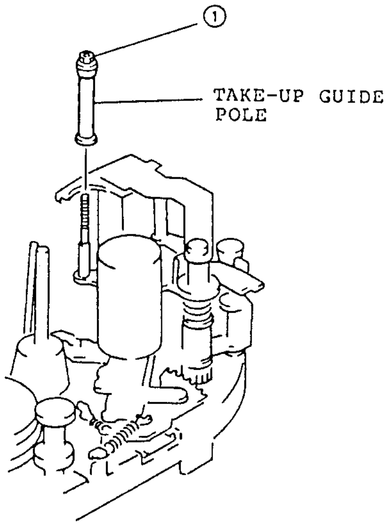


Fig. 2-68

3-13. Supply Guide Roller

1. Remove the cassette holder.
(See Figs. 2-51, 2-52, 2-53)
2. Remove one (1) hexagonal screw (0.7 mm) holding the supply guide roller. (See Fig. 2-69)
3. Turn the top of the supply guide roller counterclockwise using a hexagonal wrench (2.0 mm) to remove the roller from the roller base.

Note: Adjust as follows after installing the supply guide roller.
* CHAPTER 3
5-2. GUIDE ROLLER HEIGHT ADJUSTMENT

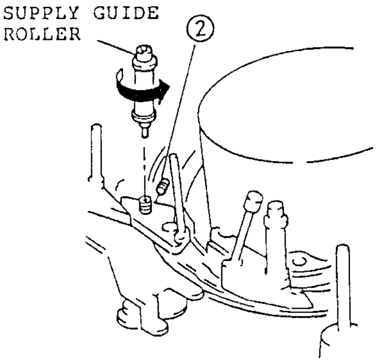


Fig. 2-69

3-14. Take-up Guide Roller

1.. Remove the cassette holder.
(See Figs. 2-51, 2-52, 2-53)
2. Remove the hexagonal screw (0.7 mm) holding the take-up guide roller.
(See Fig. 2-70)
3. Turn the top of the take-up guide roller counterclockwise using a hexagonal wrench (2.0 mm) to remove the roller from the roller base.

Note: Adjust as follows after installing the take-up guide roller.
* CHAPTER 3
5-2. GUIDE ROLLER HEIGHT ADJUSTMENT

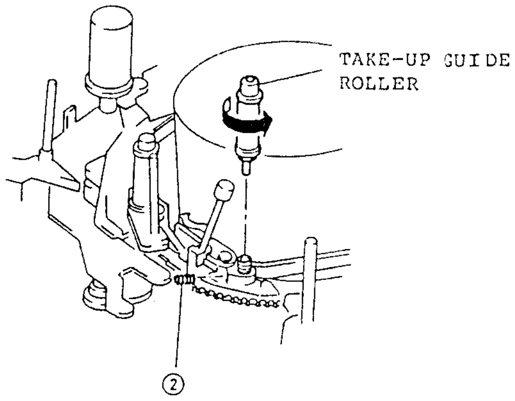


Fig. 2-70

3-15. Take-up Brake

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the spring between the chassis and take-up brake and pull out the take-up brake from the chassis. (See Fig. 2-71)

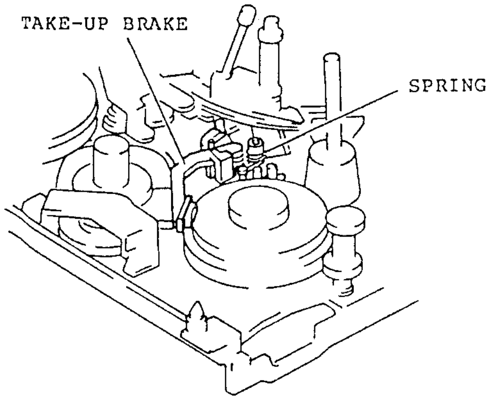


Fig. 2-71

3-16. Supply Reel Disk

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove one (1) washer holding the supply reel disk. (See Fig. 2-72)
3. Pull out the supply reel disk from the chassis.

Note: When reinstalling the supply reel disk, be sure to install the same number of the same washers between the supply reel disk and chassis as when the unit was shipped from the factory for the height adjustment.

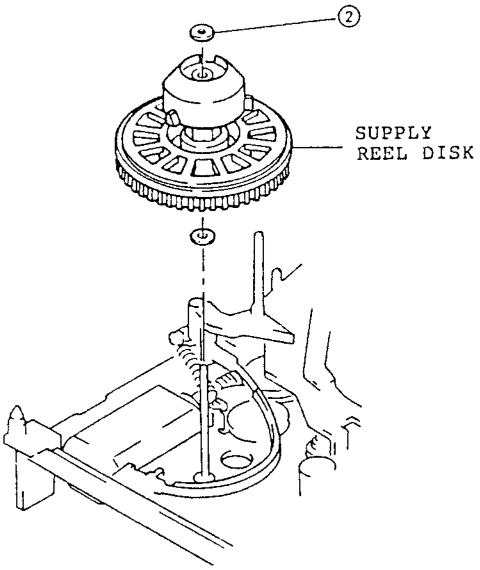


Fig. 2-72

3-17. Take-up Reel Gear

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove one (1) washer holding the take-up reel gear. (See Fig. 2-73)
3. Pull out the take-up reel gear from the chassis.

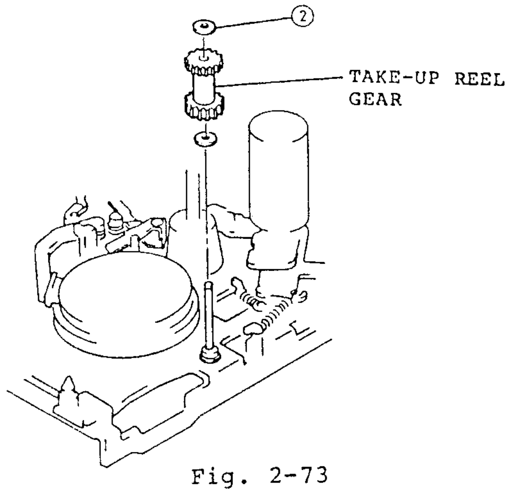


Fig. 2-73

3-18. Take-up Gear

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the take-up brake. (See Fig. 2-71)
3. Remove the take-up reel gear. (See Fig. 2-73)
4. Remove one (1) washer holding the the take-up gear. (See Fig. 2-74)
5. Pull out the take-up gear from the chassis.

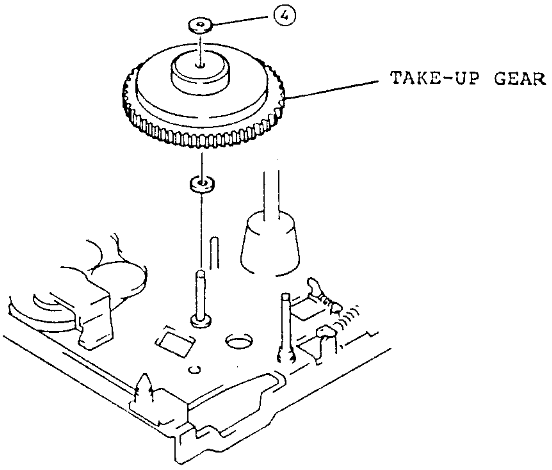


Fig. 2-74

3-19. Tension Arm and Tension Band

1. Remove the cassette holder.
   (See Figs. 2-51, 2-52, 2-53)
2. Remove the supply reel disk.
   (See Fig. 2-72)
3. Remove the spring between the tension arm and chassis. (See Fig. 2-75)
4. Remove one (1) washer holding the tension arm and one (1) screw holding the tension band.

Note: Adjust as follows after installing the tension arm and tension band.
* CHAPTER 3
  5-1. TENSION POLE POSITION ADJUSTMENT/TENSION ADJUSTMENT

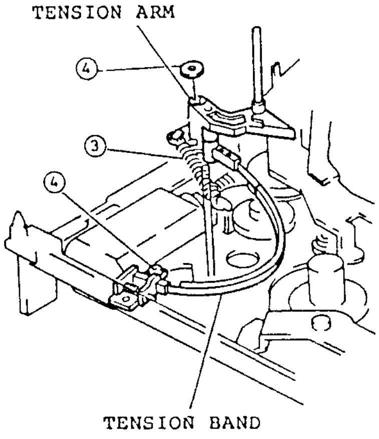


Fig. 2-75

3-20. Centre Gear Block

1. Remove the cassette holder.
   (See Figs. 2-51, 2-52, 2-53)
2. Remove the take-up brake.
   (See Fig. 2-71)
3. Remove the supply reel disk.
   (See Fig. 2-72)
4. Remove the capstan belt.
   (See Fig. 2-76)
5. Remove two (2) screws holding the centre gear block. (See Fig. 2-77)

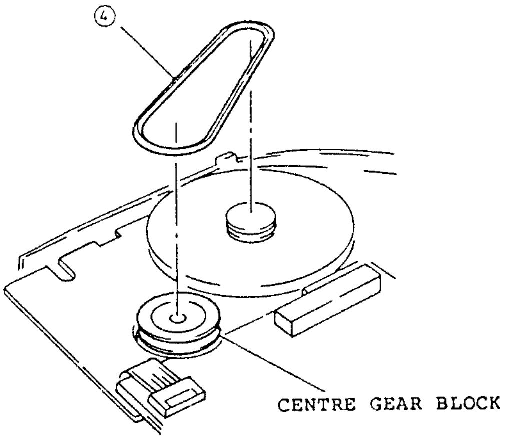


Fig. 2-76

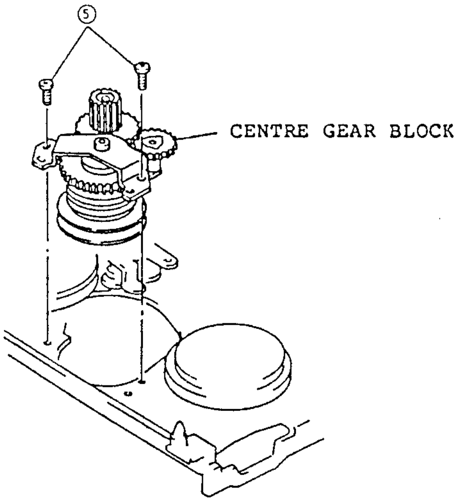


Fig. 2-77

3-21. A/C Head Arm

1. Remove the A/C head. (See Fig. 2-56)
2. Remove the dew sensor.
   (See Fig. 2-61)
3. Release the spring between the A/C head arm and chassis.
   (See Fig. 2-78)
4. Pull out the A/C head arm from the chassis.

Note: Be careful because the spring released in step 3 and a washer below it come off when the A/C head arm is removed.

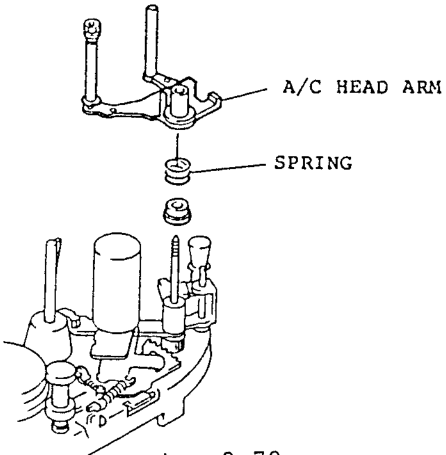


Fig. 2-78

3-22. Middle Guide Arm

1. Remove the A/C head. (See Fig. 2-56)
2. Remove the dew sensor.
   (See Fig. 2-61)
3. Remove the A/C head arm.
   (See Fig. 2-78)
4. Move the middle guide arm in the direction of the arrow and pull it out the middle guide arm from the chassis.
   (See Fig. 2-79)

Note: Adjust as follows after installing the middle guide arm.
* CHAPTER 3
  5-1. MIDDLE GUIDE ARM ASSEMBLING PHASE MARCHING

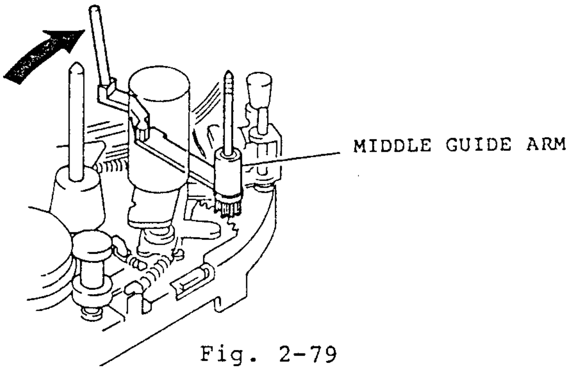


Fig. 2-79

3-23. Pressure Roller

1. Remove the A/C head. (See Fig. 2-56)
2. Remove the dew sensor. (See Fig. 2-61)
3. Remove the A/C head arm. (See Fig. 2-78)
4. Remove the middle guide arm. (See Fig. 2-79)
5. Release the spring between the pressure roller and chassis. (See Fig. 2-80)
6. Remove two (2) washers holding the pressure roller and pull out the pressure roller from the chassis.

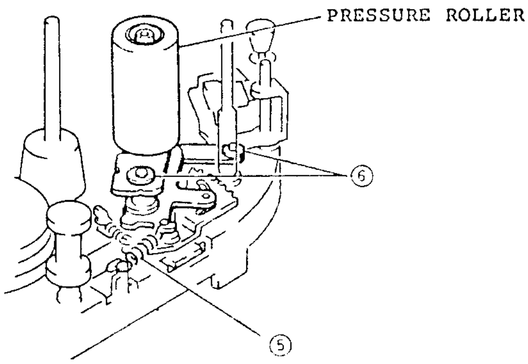


Fig. 2-80

3-24. Supply Guide Roller Base

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the supply guide roller. (See Fig. 2-69)
3. Remove the supply reel disk. (See Fig. 2-72)
4. Remove the tension arm and tension band. (See Fig. 2-75)
5. Remove one (1) washer holding the supply guide roller base. (See Fig. 2-81)

Note: Be careful because the spacer between the washer and supply guide roller and chassis comes off when the supply guide roller base is removed.

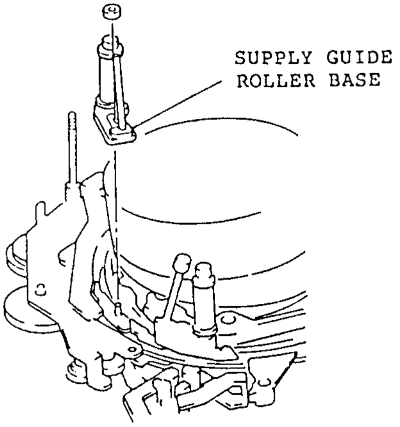


Fig. 2-81

3-25. Take-up Guide Roller Base

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the take-up guide roller. (See Fig. 2-70)
3. Remove one (1) screw holding the take-up guide roller base holder. (See Fig. 2-82)
4. Remove one (1) washer holding the take-up guide roller base.

Note: Be careful because the guide roller base shaft comes off when the take-up guide roller base is removed.

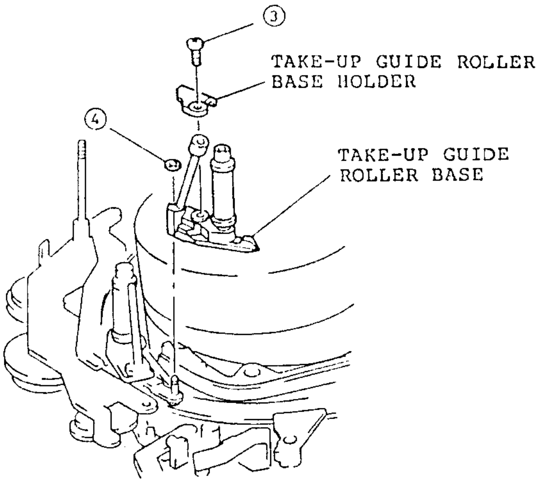


Fig. 2-82

3-26. Supply Guide Roller Rail

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the impedance roller. (See Fig. 2-67)
3. Remove the supply guide roller. (See Fig. 2-69)
4. Remove the supply reel disk. (See Fig. 2-72)
5. Remove the tension arm and tension band. (See Fig. 2-75)
6. Remove the supply guide roller base. (See Fig. 2-81)
7. Remove two (2) screws holding the supply guide roller rail. (See Fig. 2-83)

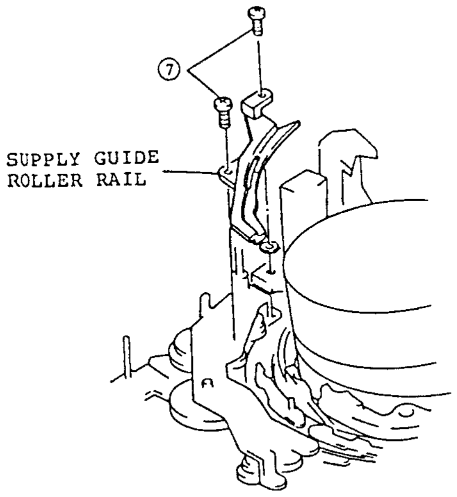


Fig. 2-83

3-27. Loading Gear Block

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the impedance roller. (See Fig. 2-67)
3. Remove the supply guide roller. (See Fig. 2-69)
4. Remove the supply reel disk. (See Fig. 2-72)
5. Remove the tension arm and tension band. (See Fig. 2-75)
6. Remove the supply guide roller base. (See Fig. 2-81)
7. Remove the supply guide roller rail. (See Fig. 2-83)
8. Remove two (2) screws holding the loading gear block. (See Fig. 2-84)

Note: Adjust as follows after installing the loading gear block.
* CHAPTER 3
1. PHASE MATCHING OF TAKE-UP/ SUPPLY LOADING RINGS AND LOADING GEAR BLOCK IN ASSEMBLY.

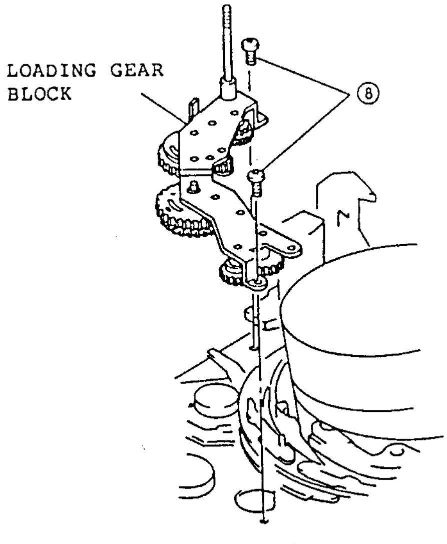


Fig. 2-84

3-28. Take-up Loading Ring Holders (1)/(2)

1. Remove the A/C head. (See Fig. 2-56)
2. Remove the dew sensor. (See Fig. 2-61)
3. Remove the A/C head arm. (See Fig. 2-78)
4. Remove the middle guide arm. (See Fig. 2-79)
5. Remove one (1) screw holding the take-up loading ring holder (2). (See Fig. 2-85)
6. Remove one (1) screw holding the take-up loading ring holder (1).

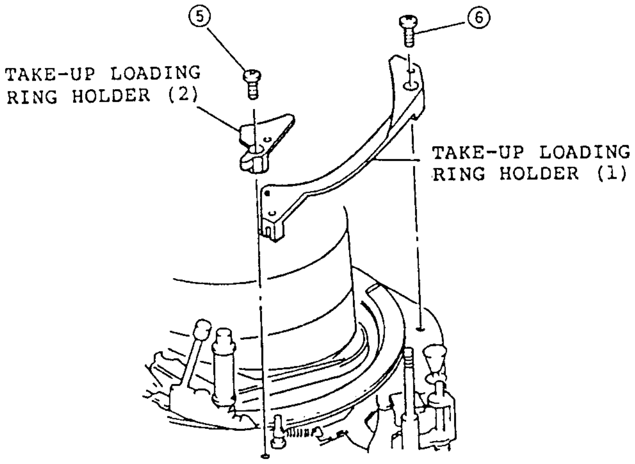

⑤
⑥
TAKE-UP LOADING RING HOLDER (2)
TAKE-UP LOADING RING HOLDER (1)

Fig. 2-85

3-29. Supply Loading Ring Holder

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the cylinder. (See Figs. 2-54, 2-55)
3. Remove the impedance roller. (See Fig. 2-67)
4. Remove the supply guide roller. (See Fig. 2-69)
5. Remove the supply reel disk. (See Fig. 2-72)
6. Remove the tension arm and tension band. (See Fig. 2-75)
7. Remove the supply guide roller base. (See Fig. 2-81)
8. Remove two (2) screws holding the supply loading ring holder. (See Fig. 2-86)

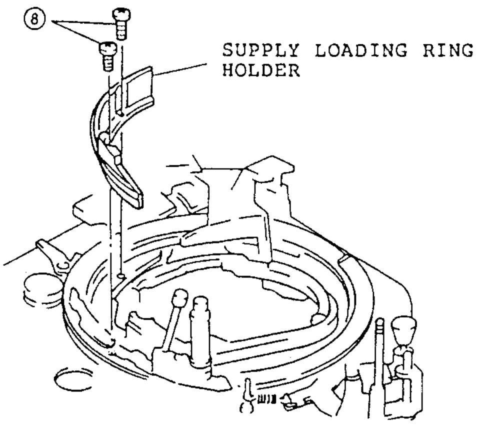


Fig. 2-86

3-30. Take-up Guide Roller Rail

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the cylinder. (See Figs. 2-54, 2-55)
3. Remove the take-up guide roller. (See Fig. 2-70)
4. Remove the take-up guide roller base. (See Fig. 2-82)
5. Remove three (3) screws holding the take-up guide roller rail. (See Fig. 2-87)

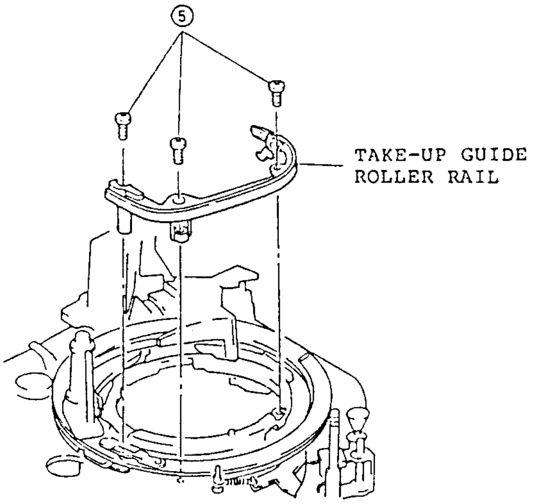


Fig. 2-87

3-31. Loading Gear (2)

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the impedance roller. (See Fig. 2-67)
3. Remove the supply guide roller. (See Fig. 2-69)
4. Remove the supply reel disk. (See Fig. 2-72)
5. Remove the tension arm and tension band. (See Fig. 2-75)
6. Remove the supply guide roller base. (See Fig. 2-81)
7. Remove the supply guide roller rail. (See Fig. 2-83)
8. Remove the loading gear block. (See Fig. 2-84)
9. Remove one (1) washer holding the loading gear (2). (See Fig. 2-88)

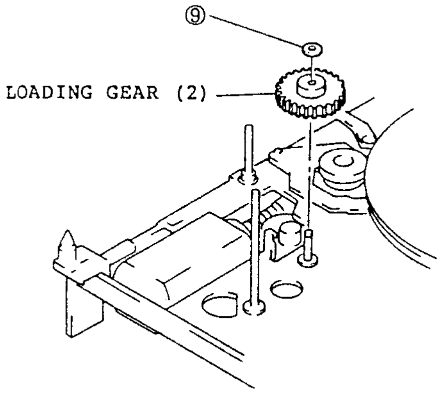


Fig. 2-88

3-32. Supply Loading Ring

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the A/C head. (See Fig. 2-56)
3. Remove the dew sensor. (See Fig. 2-61)
4. Remove the impedance roller. (See Fig. 2-67)
5. Remove the supply guide roller. (See Fig. 2-69)
6. Remove the supply reel disk. (See Fig. 2-72)
7. Remove the tension arm and tension band. (See Fig. 2-75)
8. Remove the A/C head arm. (See Fig. 2-78)
9. Remove the middle guide arm. (See Fig. 2-79)
10. Remove the supply guide roller base. (See Fig. 2-81)
11. Remove the supply guide roller rail. (See Fig. 2-83)
12. Remove the loading gear block. (See Fig. 2-84)
13. Remove the take-up loading ring holders (1) and (2). (See Fig. 2-85)
14. Remove the supply loading ring from the chassis. (See Fig. 2-89)

Note: Adjust as follows after installing the supply loading ring.
  * CHAPTER 3
    1. PHASE MATCHING OF TAKE-UP/SUPPLY LOADING RINGS AND LOADING GEAR BLOCK IN ASSEMBLY.

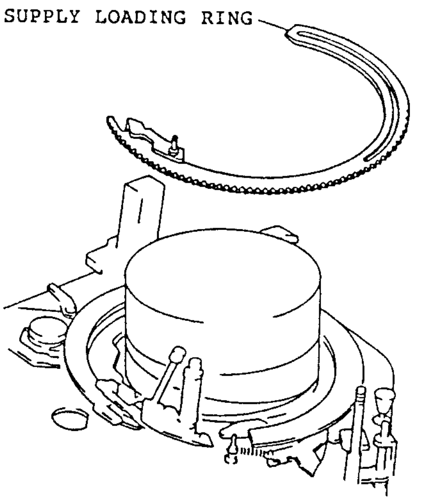


Fig. 2-89

3-33. Take-up Loading Ring

1. Remove the cassette holder. (See Figs. 2-51, 2-52, 2-53)
2. Remove the cylinder. (See Figs. 2-54, 2-55)
3. Remove the A/C head. (See Fig. 2-56)
4. Remove the dew sensor. (See Fig. 2-61)
5. Remove the impedance roller. (See Fig. 2-67)
6. Remove the supply guide roller. (See Fig. 2-69)
7. Remove the supply reel disk. (See Fig. 2-72)

8. Remove the tension arm and tension band. (See Fig. 2-75)
9. Remove the A/C head arm. (See Fig. 2-78)
10. Remove the middle guide arm. (See Fig. 2-79)
11. Remove the supply guide roller base. (See Fig. 2-81)
12. Remove the take-up guide roller base. (See Fig. 2-82)
13. Remove the supply guide roller rail. (See Fig. 2-83)
14. Remove the loading gear block. (See Fig. 2-84)
15. Remove the take-up loading ring holders (1) and (2). (See Fig. 2-85)
16. Remove the supply loading ring holder. (See Fig. 2-86)
17. Remove the take-up guide roller rail. (See Fig. 2-87)
18. Remove the supply loading ring. (See Fig. 2-89)
19. Remove one (1) screw holding the take-up loading ring holder (3). (See Fig. 2-90)
20. Remove the take-up loading ring from the chassis.

Note: Adjust as follows after installing the take-up loading ring.
  * CHAPTER 3
    1. PHASE MATCHING OF TAKE-UP/SUPPLY LOADING RINGS AND LOADING GEAR BLOCK IN ASSEMBLY.

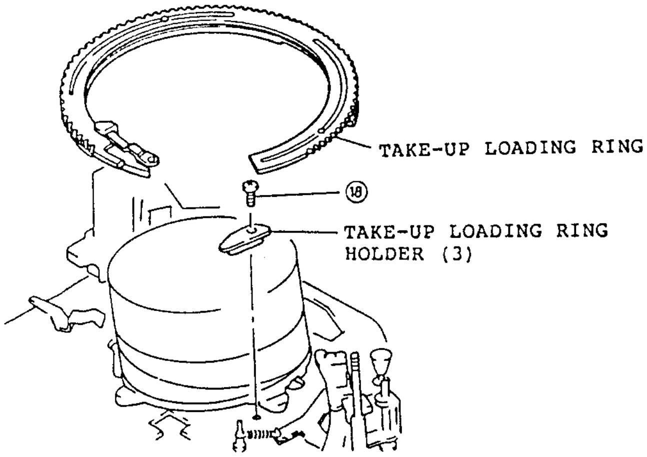


Fig. 2-90

3-34. Catcher Block and Full Erase (FE) Head

Remove the supply and take-up loading rings as described previously.

1. Remove two (2) screws holding the catcher block. (See Fig. 2-91)
2. Remove one (1) screw at the back of the catcher block which holds the FE head.

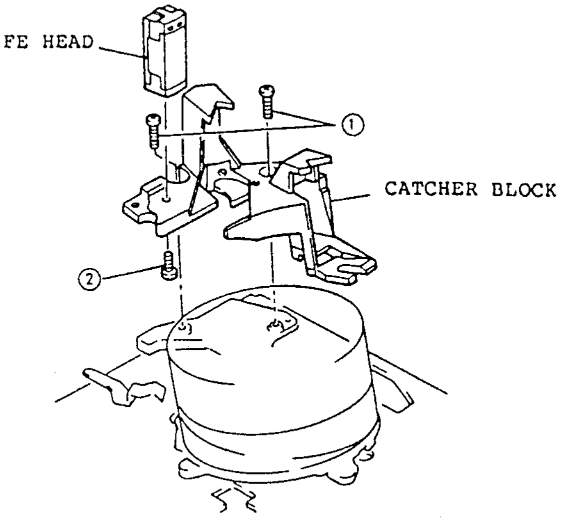


Fig. 2-91

3-35. Cylinder Base

Remove the supply and take-up loading rings as described previously.

1. Remove the catcher block. (See Fig. 2-91)
2. Remove three (3) screws holding the cylinder base. (See Fig. 2-92)

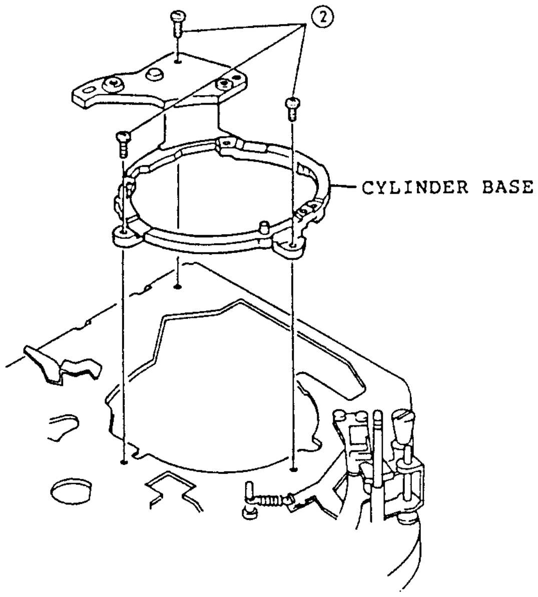
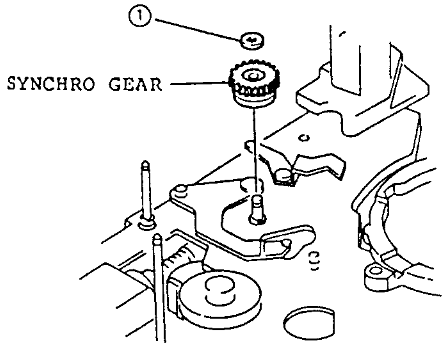


Fig. 2-92

3-36. Synchro Gear

Remove the supply and take-up loading rings as described previously.

1. Remove one (1) washer holding the synchro gear. (See Fig. 2-93)



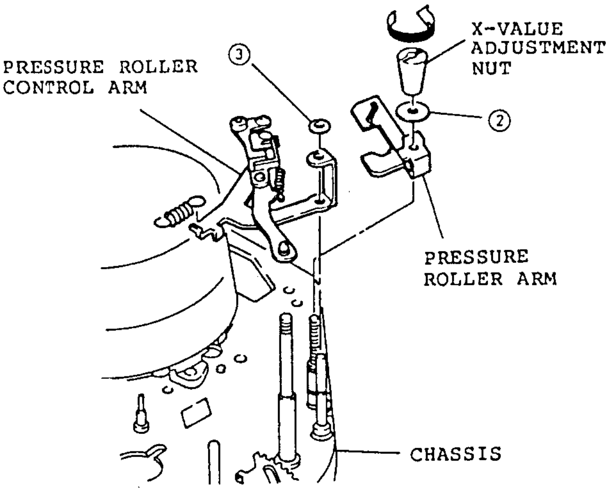
①
SYNCHRO GEAR

Fig. 2-93

3-37. Pressure Roller Arm and Pressure Roller Control Arm

Remove the supply and take-up loading rings as described previously.

1. Turn the X-value adjustment nut counterclockwise to remove it from the chassis. (See Fig. 2-94)
2. Remove one (1) washer holding the pressure roller arm.
3. Remove one (1) washer holding the pressure roller control arm.
4. Pull out the pressure roller arm and pressure roller control arm from the chassis.



PRESSURE ROLLER CONTROL ARM
③
X-VALUE ADJUSTMENT NUT
②
PRESSURE ROLLER ARM
CHASSIS

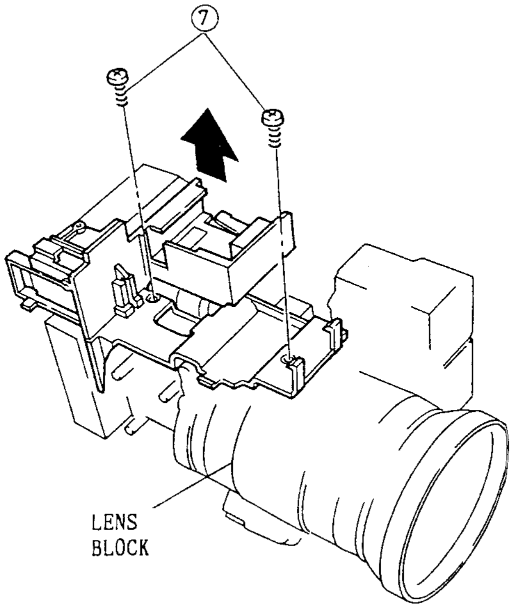
Fig. 2-94

4. LENS BLOCK REMOVAL

Remove the right case and left case as described previously.

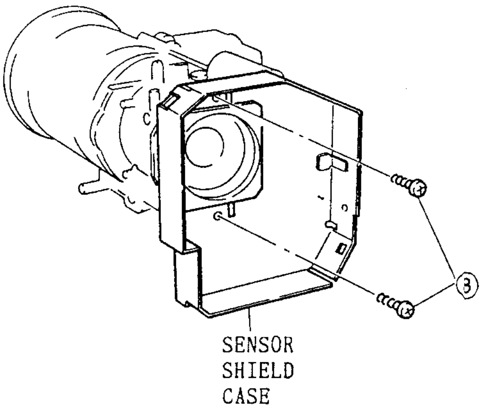
4-1. Lens Block

1. Remove the autofocus circuit board. (See Figs. 2-17, 2-18)
2. Remove the control circuit board. (See Figs. 2-22, 2-23)
3. Remove the process circuit board. (See Figs. 2-24, 2-25, 2-26)
4. Remove the sensor circuit board. (See Figs. 2-27, 2-28)
5. Remove titler circuit board. (See Fig. 2-28)
6. Remove the DC-DC converter. (See Fig. 2-30)
7. Remove two (2) screws holding the titler circuit board holder. (See Fig. 2-101)
8. Remove two (2) screws holding the sensor shield case. (See Fig. 2-102)



⑦
LENS BLOCK

Fig. 2-101



⑧
SENSOR SHIELD CASE

Fig. 2-102

4-2. Zoom Motor

Remove the lens block as described previously.

1. Remove one (1) screw holding the zoom motor. (See Fig. 2-103)

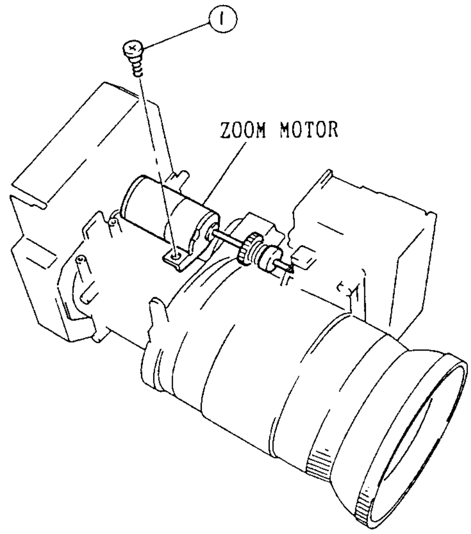

①
ZOOM MOTOR

Fig. 2-103

4-3. Focus Motor

Remove the lens block as described previously.

1. Remove one (1) screw holding the focus motor. (See Fig. 2-104)

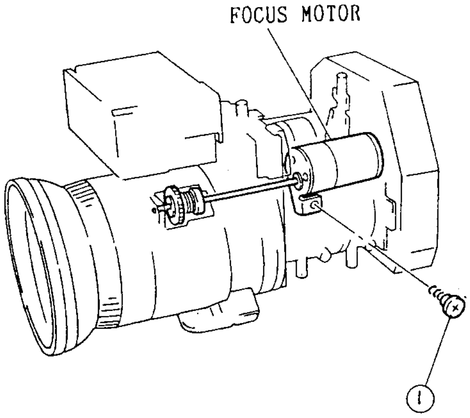

FOCUS MOTOR
①

Fig. 2-104

4-4. Iris Motor

Remove the lens block as described previously.

1. Remove one (1) screw holding the iris motor. (See Fig. 2-105)

Note: Be careful that two iris shutters come off when the iris motor is removed.

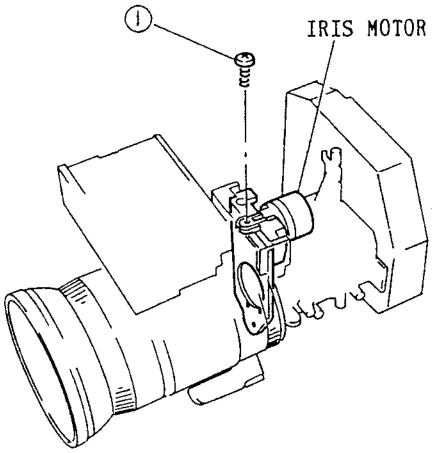

①
IRIS MOTOR

Fig. 2-105

5. ELECTRONIC VIEWFINDER (EVF) REMOVAL

Remove the electronic viewfinder as described previously.

5-1. Bottom Case

1. Turn the EVF lens block in the direction of the arrow to pull it out from the EVF. (See Fig. 2-111)
2. Remove four (4) screws holding the bottom case.

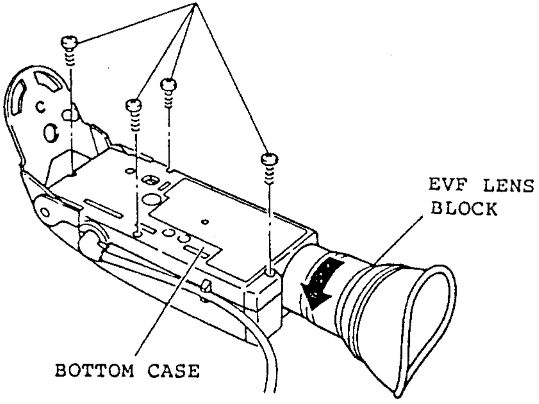

②
EVF LENS BLOCK
BOTTOM CASE

Fig. 2-111

5-2. Top Case

1. Remove the bottom case. (See Fig. 2-111)
2. Remove the electronic viewfinder (EVF) circuit board and CRT from the top case. (See Fig. 2-112)

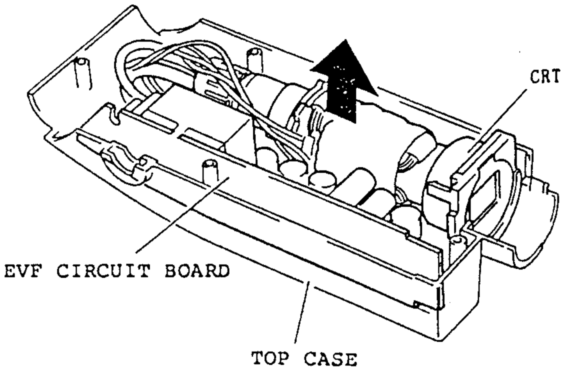

CRT
EVF CIRCUIT BOARD
TOP CASE

Fig. 2-112

5-3. Electronic Viewfinder (EVF) Circuit Board

1. Remove the bottom case. (See Fig. 2-111)
2. Remove the top case. (See Fig. 2-112)
3. Disconnect connector CN802 and the CRT socket. (See Fig. 2-113)

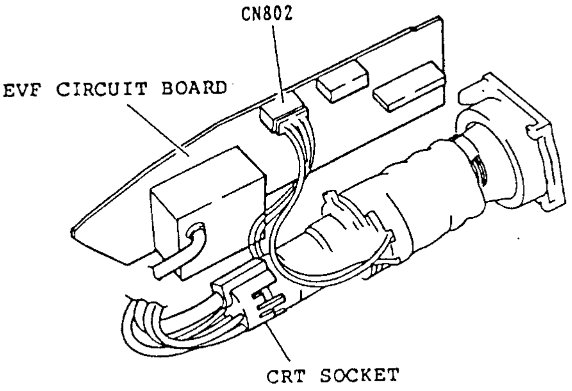

CN802
EVF CIRCUIT BOARD
CRT SOCKET

Fig. 2-113

5-4. CRT

1. Remove the bottom case. (See Fig. 2-111)
2. Remove the top case. (See Fig. 2-112)
3. Remove the EVF circuit board. (See Fig. 2-113)
4. Remove one (1) screw holding the deflection yoke in the direction of arrow (A). (See Fig. 2-114)
5. Remove the CRT cover in the direction of arrow (B).

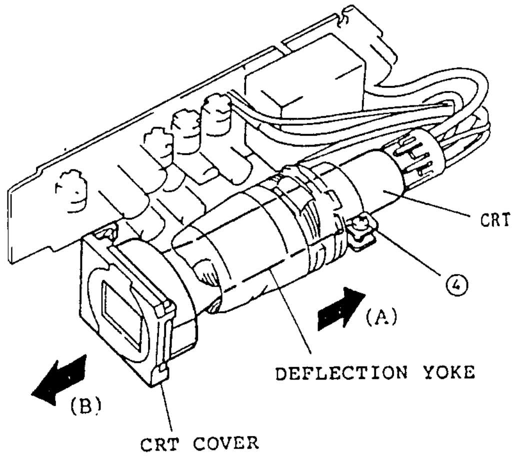
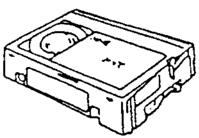
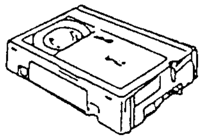
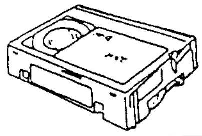
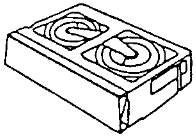
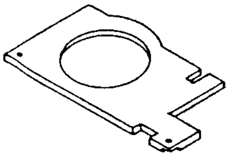
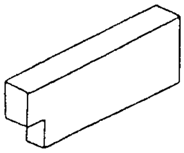
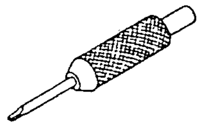
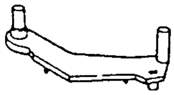
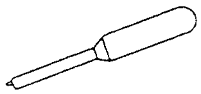
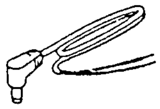
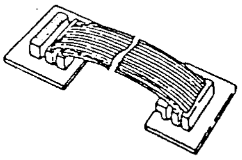
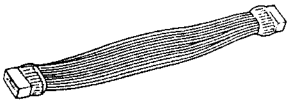
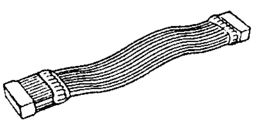
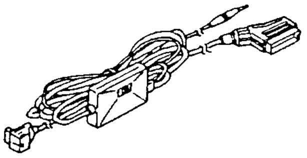
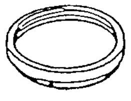

CRT
④
(A)
DEFLECTION YOKE
(B)
CRT COVER

Fig. 2-114

JIG AND TAPES FOR ADJUSTMENT

1. ALIGNMENT TAPE (50HMBE-3C) COLOUR BAR/NONE No. 7099280 	2. ALIGNMENT TAPE (HMAE-3C) NONE/1kHz No. 7099281 	3. ALIGNMENT TAPE (50HMPE-3C) MONOSCOPE/7kHz No. 7099274 	4. BACKTENSION/PLAY TORQUE METER No. 7099272 
5. MASTER PLANE No. 7099313 	6. HEIGHT JIG No. 7099259 	7. SEMI-VARIABLE RESISTOR ADJ. DRIVER No. 7099315 	8. REEL GEAR INSTALLATION JIG No. 7099314 
9. 0.7/1.27/2.0mm HEXAGONAL WRENCHES 0.7mm : No. 7099316 1.27mm : No. 7099329 	10. BACKFOCUS ADJUSTMENT DRIVER No. 7099205 	11. EXTENSION POWER CABLE No. 7099326 	12. EXTENSION CABLE 30-PIN : No. 7099311 
13. EXTENSION CABLE 16-PIN : No. 7099359 14-PIN : No. 7099360 8-PIN : No. 7099363 	14. EXTENSION CABLE 14-PIN : No. 7099362 8-PIN : No. 7099361 	15. A/V OUTPUT CABLE No. 5858521 	16. LIGHT BALANCING FILTER C8 : No. 7099223 C2 : No. 7099225 

CHAPTER 3

MECHANICAL ADJUSTMENT

1. PHASE MATCHING OF TAKE-UP/SUPPLY LOADING RINGS AND LOADING GEAR BLOCK IN ASSEMBLY (Figs. 3-1, 3-2, 3-3)

Always perform this adjustment when reinstalling the take-up/supply loading rings and loading gear block.

1) Install the take-up loading ring so that the space between the right edge of the take-up loading ring and pressure roller control arm is 0.5mm. (See Fig. 3-1)
2) Align the right end of the groove in the take-up loading ring with hole (B) in the multi-cam slider.
3) Insert a pin into hole (A) and stick it into the chassis at right angles.
4) Set gear (2), gear (3) and gear (8) of the loading gear block as shown in Fig. 3-2 (A).
5) Attach the loading gear installation jig to the loading gear block in the state set in step 4) as shown in Fig. 3-2 (B).
6) Assemble the loading gear block with the jig attached in the chassis so that hole (C) in the take-up loading ring and the recess of gear (8) are aligned and marking (A) on the take-up loading ring and marking (B) on gear (2) are aligned. (See Fig. 3-1)
7) Remove the pin and loading gear installation jig.
8) Assemble the supply loading ring into the chassis so that marking (C) on the supply loading ring and marking (D) on gear (3) are aligned. (See Fig. 3-3)

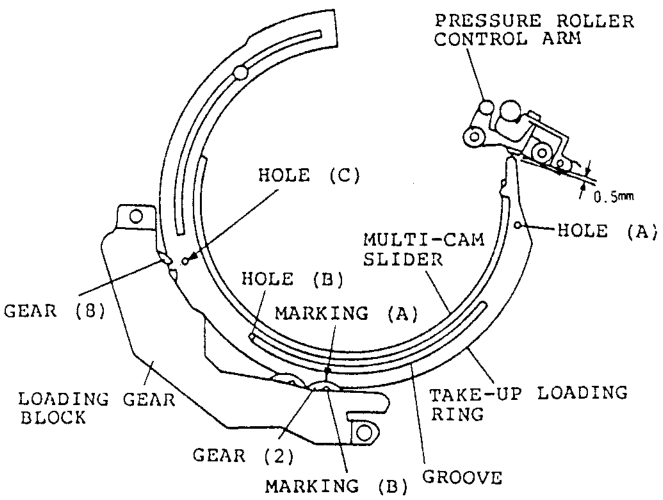


Fig. 3-1

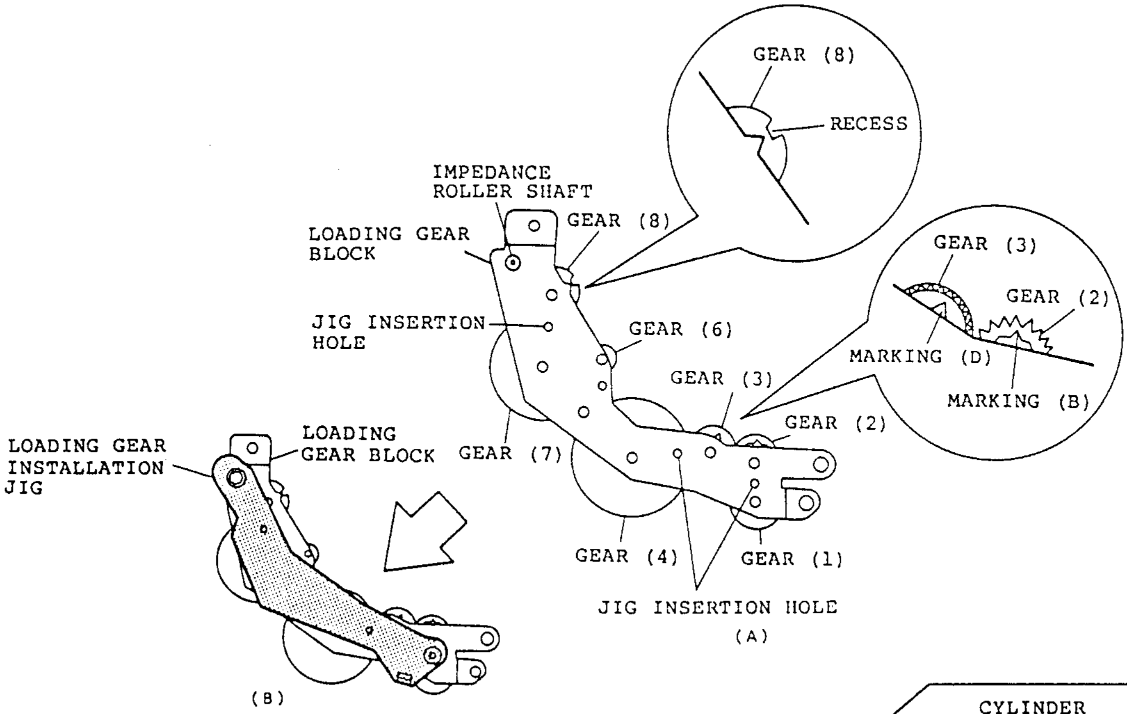

GEAR (8)
RECESS
IMPEDANCE ROLLER SHAFT
GEAR (8)
LOADING GEAR BLOCK
JIG INSERTION HOLE
GEAR (6)
GEAR (3)
GEAR (2)
MARKING (D)
MARKING (B)
GEAR (3)
GEAR (2)
GEAR (7)
GEAR (4)
GEAR (1)
JIG INSERTION HOLE
(A)
LOADING GEAR INSTALLATION JIG
LOADING GEAR BLOCK
(B)

Fig. 3-2

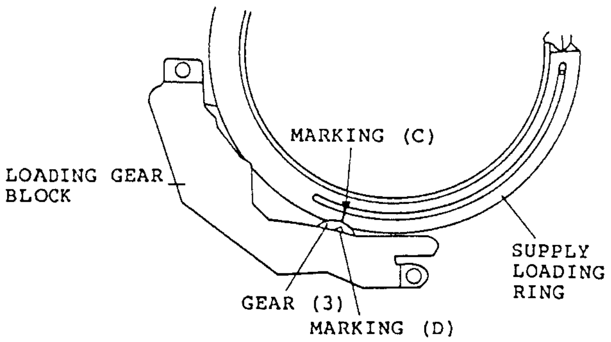

MARKING (C)
LOADING GEAR BLOCK
SUPPLY LOADING RING
GEAR (3)
MARKING (D)

Fig. 3-3

2. MECHANISM STATE SWITCH PHASE MATCHING IN ASSEMBLY (Figs. 3-4, 3-5)

Always perform this adjustment when reinstalling the mechanism state switch after checking that the take-up/supply loading rings and loading gear block are set to the positions installed in item 1.

1) Align hole (A) in the mechanism state switch holder and marking (A) on the rotor. (See Fig. 3-4)
2) Assemble the mechanism state switch into the chassis in the conditions set in step 1). (See Fig. 3-5)

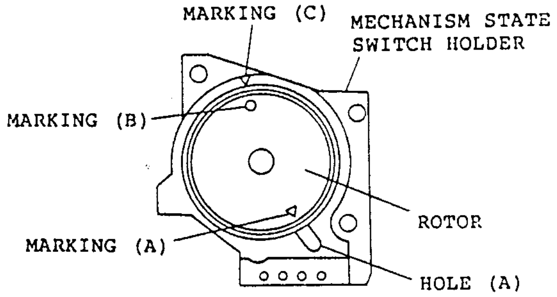

MARKING (C)
MECHANISM STATE SWITCH HOLDER
MARKING (B)
ROTOR
MARKING (A)
HOLE (A)

Fig. 3-4

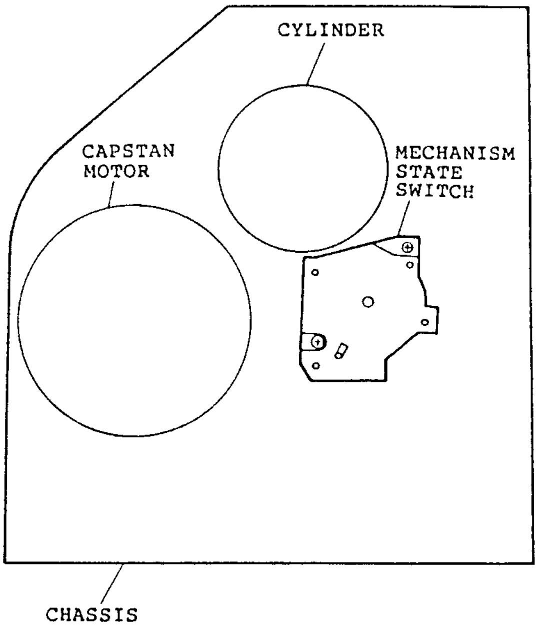

CYLINDER
CAPSTAN MOTOR
MECHANISM STATE SWITCH
CHASSIS

Fig. 3-5

3. CONFIRMATION OF UNLOADING POSITION (Fig. 3-6)

Always perform this confirmation after reinstalling the take-up/supply loading rings, loading gear block and mechanism state switch.

1) After performing loading and unloading several times, set the unit to the unloading (stop) state and check that marking (A) on the take-up guide roller rail and the center of take-up guide roller base holder are approximately aligned, and marking (B) on the supply loading ring holder and marking (C) on the supply guide roller base are also aligned. (See Fig. 3-6)

2) If the above conditions are not satisfied, match the phase of the take-up/supply loading rings and loading gear block and the phase of the mechanism state switch again.

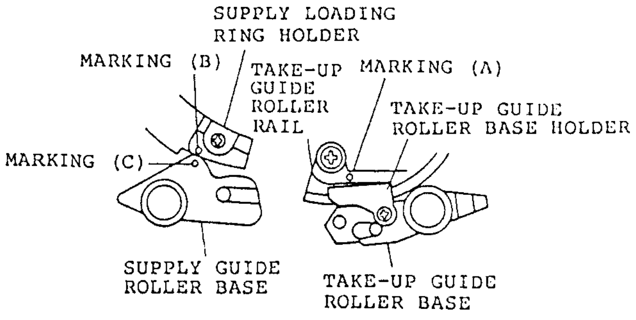

SUPPLY LOADING RING HOLDER
MARKING (B)
TAKE-UP GUIDE ROLLER RAIL
MARKING (A)
TAKE-UP GUIDE ROLLER BASE HOLDER
MARKING (C)
SUPPLY GUIDE ROLLER BASE
TAKE-UP GUIDE ROLLER BASE

Fig. 3-6

4. MIDDLE GUIDE ARM ASSEMBLING PHASE MATCHING (Fig. 3-7)

Always perform this adjustment when reinstalling the middle guide arm.

1) Assemble the middle guide arm into the chassis so that marking (A) on the arm and marking (B) on the pressure roller gear are aligned.

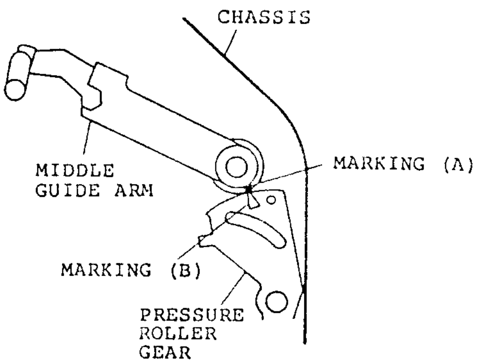

CHASSIS
MIDDLE GUIDE ARM
MARKING (A)
MARKING (B)
PRESSURE ROLLER GEAR

Fig. 3-7

5. TAPE TRANSPORT SYSTEM COMPONENTS CHECK/ADJUSTMENT

The tape transport system is the path from the supply reel disk to the take-up reel gear via the video heads. The tape transport components, especially the components that come into direct contact with tape, must be kept clean without damage, dust, oil, etc. adhering to contact surfaces. The tape transport system is adjusted before shipment from the factory, so that only when any transport components are replaced, their checking and adjustment are necessary. Confirm the following three items before performing checks and adjustments.

1) Check that the same number of the same washers as when the unit is shipped from the factory are between the supply reel disk and chassis.
2) Check that two specified washers (0.25 mm and 0.13 mm thick) are between the impedance roller and chassis. Also check that the nut on the impedance roller is tightened firmly.
3) Check that the cylinder brush is in contact with the approximate centre of the cylinder shaft.

5-1. TENSION POLE POSITION ADJUSTMENT/ TENSION ADJUSTMENT (Fig. 3-8)

Tension Pole Position Adjustment

1) Load a blank tape and set the unit to the play mode. (Rewind the tape completely before loading it.)
2) Adjust screw (A) so that the inner flange of the tension arm is aligned with the left edge of hole A in the loading gear block at the start of tape as shown in Fig. 3-8.

Tension Adjustment

1) Load the back-tension/play torque meter and set the unit to the play mode.

Note: When the back-tension/play torque meter is viewed from above, the left meter indicates back-tension torque.

2) Check that the back-tension torque is between 18 and 26 g-cm.
3) If the measurement value is outside the above specification, check the tension pole position and then clean the supply reel disk and replace the tension band.

Note: After adjustment is completed, fix screw (A) with lock paint.

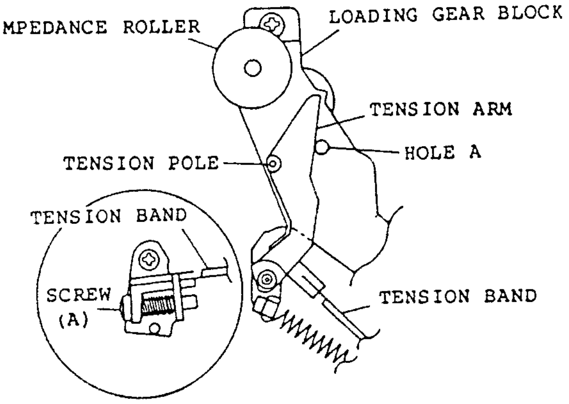

IMPEDANCE ROLLER
LOADING GEAR BLOCK
TENSION ARM
HOLE A
TENSION POLE
TENSION BAND
SCREW (A)
TENSION BAND

Fig. 3-8

5-2. TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT (Fig. 3-9)

Note: As the take-up guide pole provides a reference for the tape transport system, do not adjust it without sufficient reason.

1) Place the master plane on the cassette holder and lower the cassette holder.
2) Mount the height jig on the master plane and fit it to the guide pole.

3) Adjust the guide pole height adjustment nut so that the bottom edge of the upper flange of the take-up guide pole and the top edge of the height jig are aligned.
4) Run the tape and check that no curling or creasing occurs. If it occurs, readjust the height adjustment nut.

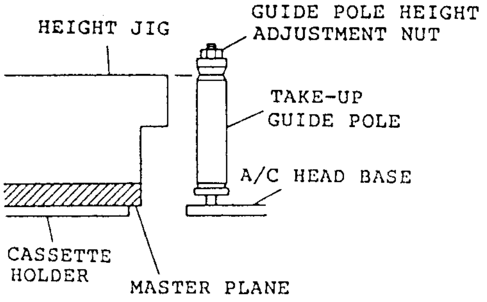

HEIGHT JIG
GUIDE POLE HEIGHT ADJUSTMENT NUT
TAKE-UP GUIDE POLE
A/C HEAD BASE
CASSETTE HOLDER
MASTER PLANE

Fig. 3-9

5-3. GUIDE ROLLER HEIGHT ADJUSTMENT

(Figs. 3-10, 3-11)

Rough Adjustment

1) Place the master plane on the cassette holder and lower the cassette holder.
2) Mount the height jig on the master plane and fit it to the supply guide roller.
3) Loosen the hexagonal screw (0.7 mm) holding the supply guide roller. (See Fig. 3-10)
4) Adjust the hexagonal screw (2.0 mm) using a hexagonal wrench so that the bottom edge of the upper flange of the supply guide roller and the top edge of the height jig are aligned.
5) Roughly adjust the take-up guide roller roughly in the same way.

Note: After this rough adjustment is completed, always perform the following precise adjustment.

Precise Adjustment

6) Complete the guide roller height rough adjustment.
7) Connect an oscilloscope to TP203 on the luma/chroma circuit board.
8) Synchronize the oscilloscope with TP202 (SW25) on the luma/chroma circuit board.
9) Set the TRACKING control to the centre click position.
10) Playback the alignment tape (50HMPE-3C).
11) Check that the FM waveform is flat.
12) Then check that the FM drops at the start and end of the envelope are equal when the TRACKING control is turned to the left and right.
13) If the above item cannot be confirmed, loosen the hexagonal screws (0.7mm) holding the supply and take-up guide rollers, and fine adjust the height of both guide rollers so the FM waveform is flat and the FM drops at the start and end of the envelope are equal when the TRACKING control is turned to the left and right.

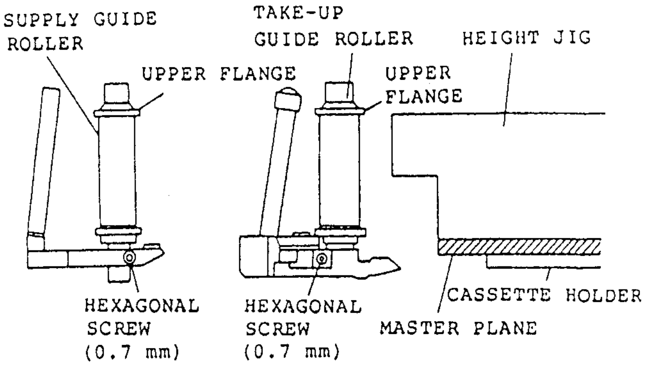

SUPPLY GUIDE ROLLER
TAKE-UP GUIDE ROLLER
HEIGHT JIG
UPPER FLANGE
UPPER FLANGE
HEXAGONAL SCREW (0.7 mm)
HEXAGONAL SCREW (0.7 mm)
CASSETTE HOLDER
MASTER PLANE

Fig. 3-10

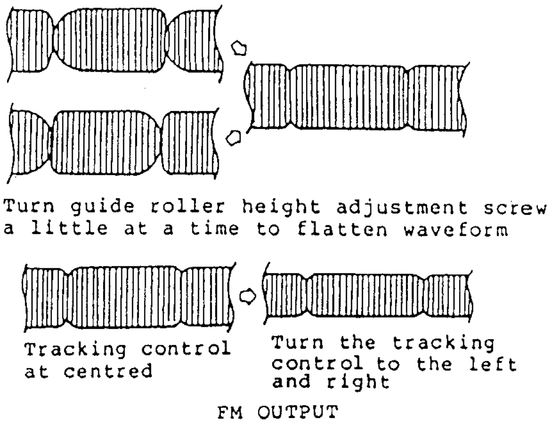

Turn guide roller height adjustment screw a little at a time to flatten waveform
Tracking control at centred
Turn the tracking control to the left and right
FM OUTPUT

Fig. 3-11

5-4. A/C HEAD ADJUSTMENT

(Figs. 3-12, 3-13, 3-14, 3-15)

Perform the height, tilt, azimuth and X-value adjustments in this item. When the A/C head is reinstalled, perform the height, tilt and azimuth adjustments repeatedly to determine the A/C head installation position, then perform the X-value adjustment.

Always perform rough adjustment first and then precise adjustment. If the A/C head adjustment is not performed, the middle guide arm strikes against the A/C head and the loading state is not obtained.

Rough Adjustment

1) Place the master plane on the cassette holder and lower the cassette holder.
2) Adjust the height adjustment nut so that the top of the master plane is 2.0 ± 0.2 mm higher than the A/C head base. (See Fig. 3-12)
3) Adjust screws (A), (B) and (C) so that there is 2.0 ± 0.2 mm between the bottom edges of the A/C head plate and A/C head base, and the A/C head is at right angles to the A/C head base.

Precise Adjustment

4) Connect an oscilloscope to the audio output jack.
5) Playback the alignment tape (50HMPE-3C).
6) Adjust screws (A), (B) and (C) so that the audio output is maximum and flat (without fluctuations). (See Figs. 3-12, 3-13)

X-Value Adjustment

7) Connect an oscilloscope to TP203 on the luma/chroma circuit board.
8) Synchronize the oscilloscope with TP202 (SW25) on the luma/chroma circuit board.
9) Playback the alignment tape (50HMPE-3C).
10) Turn the TRACKING control to the left and right from the centre click position and check that the FM output is maximum at the centre position and starts to drop at the same gradient on the left and right. If the above conditions are satisfied, the X-value adjustment is correct. (See Figs. 3-14, 3-15)
11) If the above conditions are not satisfied, adjust the X-value adjustment nut using a flat-bladed screwdriver, etc. so that the FM output is maximum when the TRACKING control is set to the centre click position and it starts to drop when the control is turned to the left and right at the same angle.
12) Check step 9) again.

Note: After adjustment is completed, adjust the audio bias level in 3. VTR SECTION ADJUSTMENT in ELECTRICAL ADJUSTMENT.

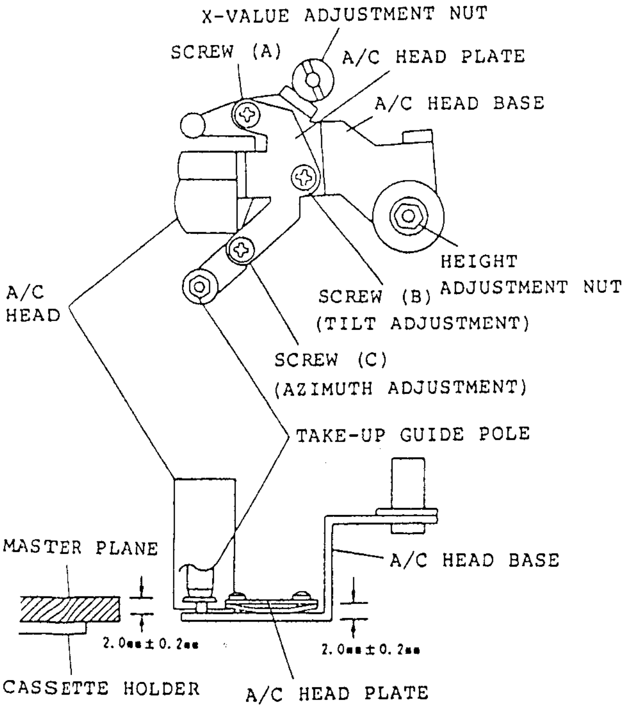

X-VALUE ADJUSTMENT NUT
SCREW (A)
A/C HEAD PLATE
A/C HEAD BASE
HEIGHT ADJUSTMENT NUT
A/C HEAD
SCREW (B)
(TILT ADJUSTMENT)
SCREW (C)
(AZIMUTH ADJUSTMENT)
TAKE-UP GUIDE POLE
MASTER PLANE
A/C HEAD BASE
2.0mm±0.2mm
2.0mm±0.2mm
CASSETTE HOLDER
A/C HEAD PLATE

Fig. 3-12

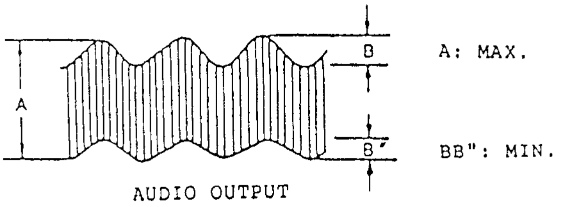

A
B
B'
A: MAX.
BB": MIN.
AUDIO OUTPUT

Fig. 3-13

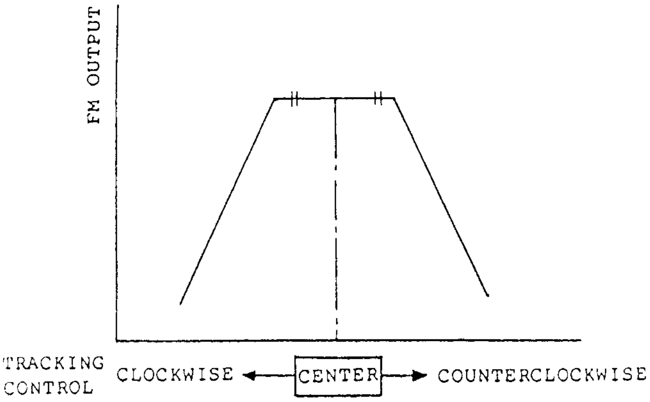


Fig. 3-14

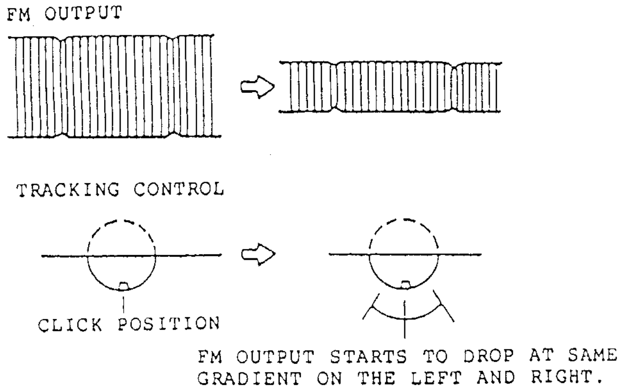

FM OUTPUT
TRACKING CONTROL
CLICK POSITION
FM OUTPUT STARTS TO DROP AT SAME GRADIENT ON THE LEFT AND RIGHT.

Fig. 3-15

6. ADJUSTMENT AFTER REPLACING CYLINDER (VIDEO HEADS) (Fig. 3-16)

When the cylinder is replaced, the relative height of the cylinder and guide roller, and the X-value, etc. drift (the drift is very small when the cylinder is replaced correctly), so that the tape transport system and servo system must be adjusted. Perform check and adjustment following the order below.

1) Load a blank tape and playback it. Check that no curling or creasing occurs around the guide rollers. If it does, fine adjust the height of the guide rollers.
2) Check that the FM output is flat without level fluctuations. If it cannot be checked, adjust the height of the guide rollers. Refer to the following item for how to check the flatness.

3) Perform check and adjustment of the head switching point. Refer to 3. VTR SECTION ADJUSTMENT in ELECTRICAL ADJUSTMENT for the adjustment method.

4) Check that the X-value adjustment is correct. (If it cannot be checked, do not adjust the X-value.)
If it can be checked, proceed to step 7).
If it cannot be checked, proceed to step 5).

5) Perform check and adjustment of the tracking preset. Refer to 3. VTR SECTION ADJUSTMENT in ELECTRICAL ADJUSTMENT for the adjustment method.

6) Perform the X-value adjustment.

7) Perform the following adjustments, referring to 3. VTR SECTION ADJUSTMENT in ELECTRICAL ADJUSTMENT.
   - Record Luma/Chroma Level Adjustment

Checking the Flatness and Level Fluctuations of FM Output

1) Connect an oscilloscope to TP203 on the luma/chroma circuit board.
2) Synchronize the oscilloscope with TP202 (SW25) on the luma/chroma circuit board.
3) Set the TRACKING control to the centre click position.
4) Playback the alignment tape (50HMPE-3C).
5) Adjust the voltage level control of the oscilloscope so that the maximum amplitude of the FM output is set to 4 graduations on the monitor of the oscilloscope. (See Fig. 3-16)
6) Turn the TRACKING control to set the maximum amplitude of FM output to 3 graduations on the monitor of the oscilloscope. (See Fig. 3-16)
7) Check that the minimum amplitude is set to more than 2 graduations at this time. If it cannot be confirmed, fine adjust the height of the guide rollers.

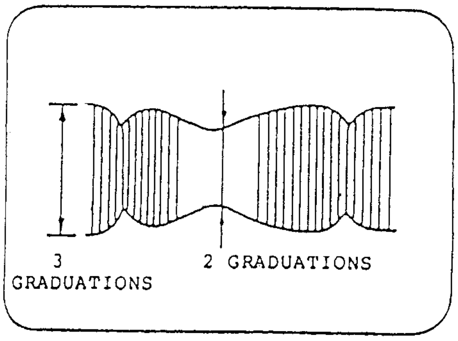


Fig. 3-16

7. TORQUE CONFIRMATION (Fig. 3-17)

Confirm the following before adjusting the torque.

- Check that the take-up brake is compressed against the take-up gear.

7-1. TAKE-UP TORQUE CONFIRMATION

1) Load the back-tension/play torque meter and set the unit to the play mode.
2) Check that the torque indicated by the right meter is between 40 and 60 g-cm.

7-2. REVERSE-SEARCH TORQUE CONFIRMATION

1) Load the back-tension/play torque meter and set the unit to the reverse-search mode.
2) Check that the torque indicated by the left meter is more than 60 g-cm.

7-3. REVERSE-SEARCH BRAKE TORQUE CONFIRMATION

1) Load the back-tension/play torque meter and set the unit to the reverse-search mode.
2) Check that the brake torque indicated by the right meter is between 15 and 35 g-cm.

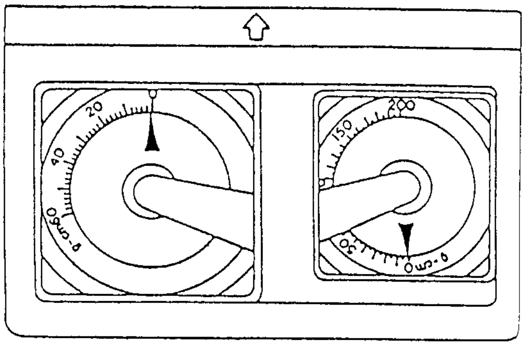


Fig. 3-17

CHAPTER 4 ELECTRICAL ADJUSTMENT

1. CONNECTIONS FOR ADJUSTMENT

Remove the right case and left case as described previously.

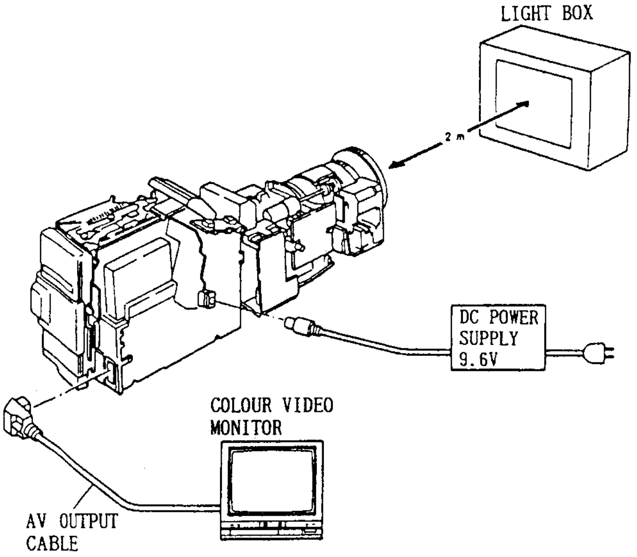


Fig. 4-1

2. CAMERA SECTION ADJUSTMENT

2-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITION

1. Sensor Circuit Board
2. Control Circuit Board
3. Autofocus Circuit Board
4. Process Circuit Board
5. Titler Circuit Board
6. DC-DC Converter

A. 14-Pin Extension Cable (Part No. 7099362). Connect the sensor circuit board and process circuit board.
B. 8-Pin Extension Cable (Part No. 7099361). Connect the sensor circuit board and process circuit board.
C. 8-Pin Extension Cable (Part No. 7099363). Connect the titler circuit board and control circuit board.

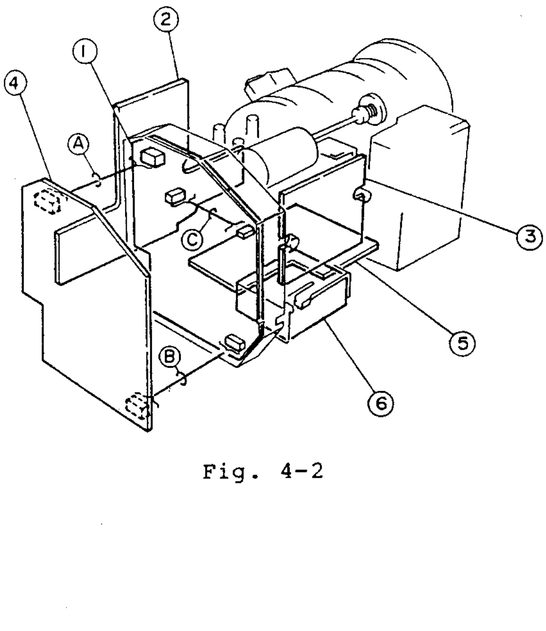


Fig. 4-2

2-2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

- Test Equipment
  Oscilloscope (dual trace)
  (Vectorscope)
  Digital Voltmeter (DVM)
  Frequency Counter
  Colour Video Monitor
- Charts, etc.
  Gray Scale Chart
  Colour Bar Chart
  Resolution Chart
  Backfocus Adjustment Chart
  Light Box (3100°K)
  DC Power Supply (9.6 V)
  DC Power Supply (1.4 V)
  Electrolytic Capacitor (47 μF)
  Backfocus Adjustment Driver
  Light Balancing Filter C2
  Light Balancing Filter C8

2-3. ADJUSTMENT CONDITIONS

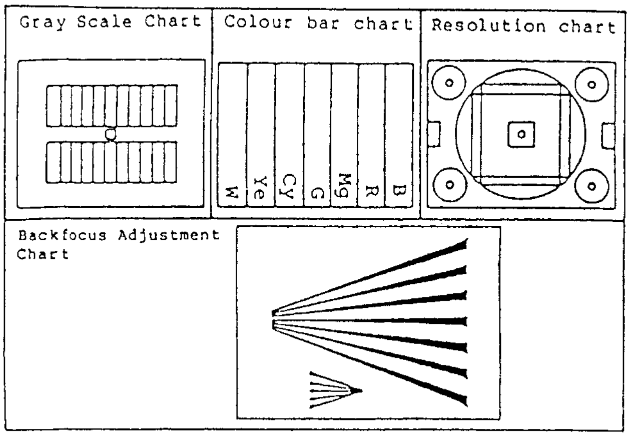
1) Check that the VTR section has been adjusted correctly before adjusting the camera section.
2) Connect this unit, a power supply and a colour video monitor as shown in Fig. 4-1.
3) Place the chart (light box) 2 m away from the camera (lens surface) when otherwise not specified.
4) Point the camera at the chart to fill the video period when otherwise not specified.
5) Use the 10:1 probe of the oscilloscope when otherwise not specified.
6) When "Trigger the oscilloscope internally" is specified, set the time base of the oscilloscope to 10 μs/div.
7) When using TP205 (VIDEO OUT) on the luma/chroma circuit board to perform adjustment, be sure to terminate the AV output jack with 75 ohm.

2-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

Operate Slide Cover ············	"CAM." position
MODE switch ············	"S" position
Shutter Speed ·······	"50 (1/50 sec)"
Exposure ············	"0"
FOCUS Switch ···········	"MAN" position
WHITE BAL switch ·······	"MAN" position
WHITE BAL control ······	"Light Bulb" position
IMAGE switch ···········	"POS" position

2-5. LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 4-1



2-6. CAMERA ADJUSTMENT

1) Subcarrier Frequency Adjustment
(Fig. 4-52)

This adjustment set for frequency adjustment of subcarrier.

Test Point: TP203 Process
Adjust: CT205-1 (Fo ADJ) Process
Observe: Frequency Counter

1. Connect the frequency counter to TP203.
2. Adjust CT205-1 (on the IC205) for 4.433619MHz ± 20Hz.

Note: Be careful when applying an adjustment driver to CT205-1 because the stray capacitance of the driver may vary the frequency.

2) VCO Lock Adjustment (Fig. 4-52)

Test Point: TP202 Process
Adjust: CT205-2 (VCO LOCK) Process
Observe: DVM

1. Connect the DVM to TP202.
2. Adjust CT205-2 (on the IC205) for 3.2V ± 0.1V.

Note: Be careful when applying an adjustment driver to CT205-2 because the stray capacitance of the driver may vary the voltage. Use non-metalic adjustment tool.

3) Drive Pulse Frequency Adjustment
(Fig. 4-51)

This adjustment sets the drive pulse frequency to the specified value.

Test Point: TP101 Sensor
Adjust:
CT101 (DRIVE CLOCK Fo) Sensor
Observe: DVM

1. Connect the DVM to TP101.
2. Adjust CT101 for 3.0V ± 0.1V.

Note: Be careful when applying an adjustment driver to CT101 because the stray capacitance of the driver may vary the voltage. Use non-metalic adjustment tool.

4) Sensor Sub Voltage Adjustment
(Fig. 4-3, 4-51)

This adjustment sets the sensor sub-voltage. If this adjustment is incomplete, blooming and surface roughness appear in the picture.

Test Point: TP102 Sensor
Adjust:
RT101 (SENSOR SUB VOLTAGE) Sensor
Observe: DVM

1. Set the shutter speed to 60 (1/60 sec).
2. Check the code on the back of the image sensor.
3. Connect the DVM to TP102.
4. Adjust RT101 according to Table 4-2 to set the voltage at TP102.

Table 4-2

CODE	E	F	G	H	J	K	L	M
VOLTAGE	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5
CODE	N	P	Q	R	S	T	U	V
VOLTAGE	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5
CODE	W	X	Y	Z				
VOLTAGE	17.0	17.5	18.0	18.5				

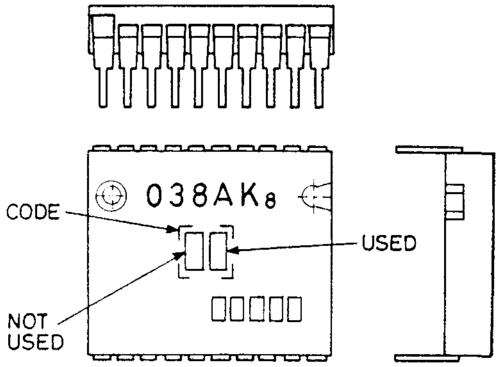


Fig. 4-3

5) Professional AE Adjustment
(Fig. 4-52)

Note: Perform this adjustment while the camera is disconnected from the VTR (PG207).

This adjustment sets the switching points of the shutter speed and F number. If this adjustment is incomplete, the professional AE does operate normally.

Test Point: TP204 Process
TP201-2 Process
TP201-3
Adjust:
RT201 (AE OFFSET) Process
RT202 (AE GAIN) Process
RT203 (AE HALL CURRENT) Process
Observe: DVM

Note: When the iris is opened :
Apply DC 5V to PG207-13.
When the iris is closed ;
Do not apply DC 5V to PG207-13.

1. Connect the DVM to TP204.
2. Adjust RT201 so the voltage at TP204 is 2V. This is a reference value in the following adjustments.

3. Connect the DVM to TP201-3.
4. Adjust RT202 so the difference in the voltage at TP201-3 is 6V when the iris is opened and closed.
5. Measure the voltage at TP201-3 when the iris is opened.
   If it is 7.5V or less, proceed to step 6. If it is higher than 7.5V, adjust RT201 to decrease the voltage at TP204 slightly and then perform readjustment from step 2.
6. Measure the voltage at TP201-3 when the iris is closed. If it is 0.55V or higher, proceed to step 7. If it is less than 0.55V, adjust RT201 to increase the voltage at TP204 slightly and then perform readjustment from step 2.
7. Adjust RT201 so the voltage at TP201-3 is 7V when the iris is opened.
8. Adjust RT201 and RT202 so the voltage at TP201-3 is 7V when iris is opened and 1V when it is closed.
9. Connect the DVM to TP201-2.
10. Adjust RT203 so the voltage at TP201-2 is 0.3V when the iris is opened.
11. Check that the voltage at TP201-2 is between 6.5V and 7.1V when the iris closed.

6) Backfocus Adjustment (Fig. 4-4)

The propose of this adjustment is to ensure proper focus tracking throughout the zoom range.

Adjust: BACKFOCUS ADJUSTMENT POINT (BACKFOCUS LENS)
Observe: Colour Video Monitor

1. Position the camera section two (2) meters from the backfocus adjustment chart and illuminate the object with approximately 100 lux.
2. Set the zoom to wide-angle end and set the index on the focus ring to two (2) meters.
3. Loosen the relay lens retaining screw.
4. Insert the backfocus adjustment driver into the backfocus adjustment hole and turn it to the left and right to optimize the focus.
5. Set the zoom to telephoto end and check that the chart is in focus. If it is not focused, set the zoom to wide-angle and readjust step 4.
6. Adjust so the chart is approximately in focus at both the wide-angle and telephoto ends with the focus ring set to two (2) meters.

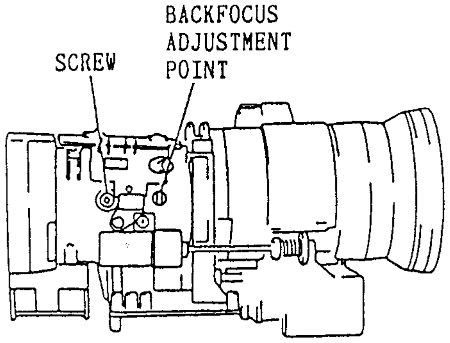


Fig. 4-4

Note: After adjustment is completed, tighten the relay lens retaining screw and fix it with locking paint.

7) Luminance Setup Adjustment
(Figs. 4-5, 4-52)

This adjustment sets the brightness of the picture.

Test Point:
TP205 (VIDEO OUT) Luma/Chroma
Adjust:
RM201-2 (LUMA SETUP) Process
Observe: Oscilloscope

1. Cap the lens.
2. Connect the oscilloscope to TP205.
3. Trigger the oscilloscope internally.
4. Adjust RM201-2 for 35mV ± 15mV from the blanking level to the centre of the waveform.

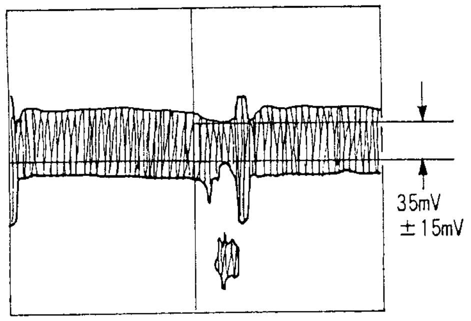


Fig. 4-5

8) AIC Level Adjustment
(Figs. 4-6, 4-52)

This adjustment sets the balance point of the auto iris control.

Test Point:
TP205 (VIDEO OUT) Luma/Chroma
Adjust RM201-3 (AIC) Process
Observe: Oscilloscope

1. Aim the camera at the gray scale chart.
2. Connect the oscilloscope to TP205.
3. Trigger the oscilloscope internally.
4. Adjust RM201-3 for 700mVp-p ± 15mV from the blanking level to the centre of the white level on the gray scale.

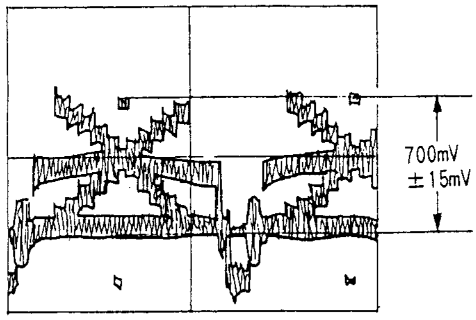


Fig. 4-6

9) Matrix Adjustment (Figs. 4-7, 4-52)
This adjustment corrects for unevenness in tint.

Test Point:	TP201-8	Process
Adjust:	RM202-1 (MATRIX)	Process
Observe:	Oscilloscope	

1. Aim the camera at the colour chart.
2. Connect the oscilloscope to TP201-8.
3. Trigger the oscilloscope internally.
4. Adjust RM202-1 so that the blue level becomes 50% ± 10% of the white level.

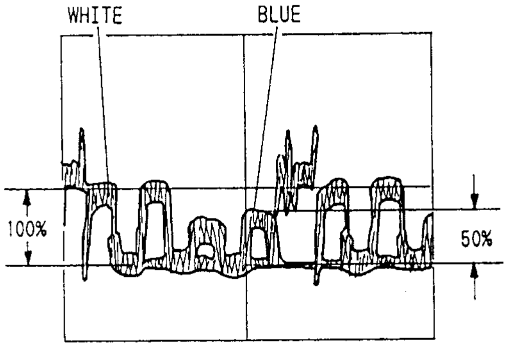


Fig. 4-7

10) White Balance Control Position Adjustment

Test Point:	TP201-9	Process
Adjust:	WHITE BAL control	
Observe:	DVM	

1. Confirm that the WHITE BAL switch is in the MAN position.
2. Connect the DVM to TP201-9.
3. Adjust WHITE BAL control, location on the left side of the case, for 1.4V ± 0.05V.

Note: White balance control position adjustment is required prior to performing black balance, white balance adjustment, burst level adjustment.

11) Black Balance Adjustment
(Figs. 4-8, 4-52)
This adjustment sets the proper black balance of the picture.

Test Point:
TP205 (VIDEO OUT) Luma/Chroma

Adjust:

RM201-1	(BLU SETUP)	Process
RM202-4	(RED SETUP)	Process
RM202-5	(GRN SETUP)	Process

Observe: Oscilloscope
Vectorscope

Adjustment using the oscilloscope
(Fig. 4-8)

1. Cap the lens.
2. Set the MODE switch to the "M" position.
3. Connect the oscilloscope to TP205.
4. Trigger the oscilloscope internally.
5. Connect TP201-7 (RED) and TP201-8 (BLU) to ground (TP201-10).
6. Adjust RM202-5 for minimum carrier in the waveform.
7. Remove the ground (TP201-10) connections from TP201-7 and TP201-8.
8. Adjust RM201-1 and RM202-4 for minimum carrier in the waveform.
9. Set the MODE switch to the "S" position (Shutter Speed:1/50, Exposure:0).

Adjustment using the vectorscope
See Page 4-7.

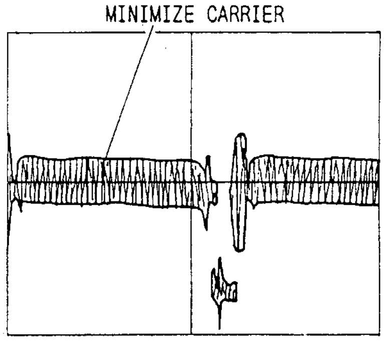


Fig. 4-8

12) White Balance Adjustment
(Figs. 4-9, 4-52)
This procedure sets the correct red and blue signal levels for proper white balance circuit operation.

Test Point:
TP205 (VIDEO OUT) Luma/Chroma

Adjust:	RM202-2 (RED GAIN)	Process
	RM202-3 (BLU GAIN)	Process
Observe:	Oscilloscope Vectorscope	

Adjustment using the oscilloscope
(Fig. 4-9)

1. Aim the camera at the gray scale chart.
2. Connect the oscilloscope to TP205.
3. Trigger the oscilloscope internally.
4. Adjust RM202-2 and RM202-3 to minimize the carriers at each step of the waveform.

Adjustment using the vectorscope
See Page 4-7.

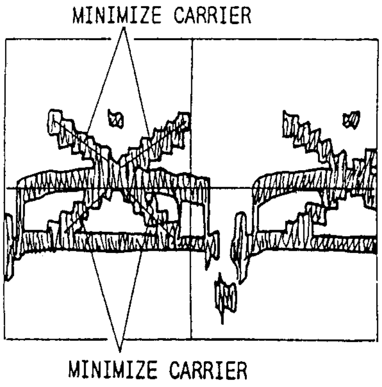


Fig. 4-9

13) Burst Level Confirmation
(Figs. 4-10, 4-52)

Test Point:
TP205 (VIDEO OUT) Luma/Chroma
Observe: Oscilloscope

1. Aim the camera at the gray scale chart.
2. Connect the oscilloscope to TP205.
3. Trigger the oscilloscope internally.
4. Confirm that the burst level is in the 300mV ± 30mV.

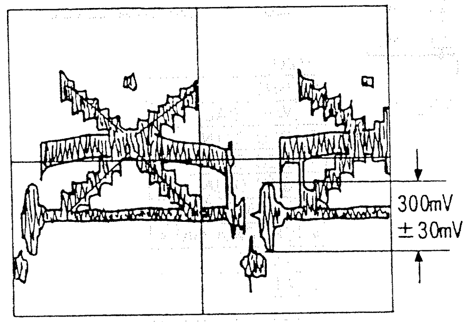


Fig. 4-10

14) Auto White Balance Adjustment
(Figs. 4-11, 4-52)

This adjustment sets the auto white balance performance.

Test Point:
TP205 (VIDEO OUT) Luma/Chroma
Adjust: RM201-4 (WHT BAL) Process
Observe: Oscilloscope
Vectorscope

Adjustment using the oscilloscope
(Fig. 4-16)

1. Set the WHITE BAL switch to the AUTO position.
2. Attach the light balancing filter C10 (C8 + C2) over the lens.
3. Aim the camera at the gray scale chart.
4. Connect the oscilloscope to TP205.
5. Trigger the oscilloscope internally.
6. Adjust RM201-4 to minimize the carriers at each step of the waveform.

Adjustment using the vectorscope
See Page 4-7.

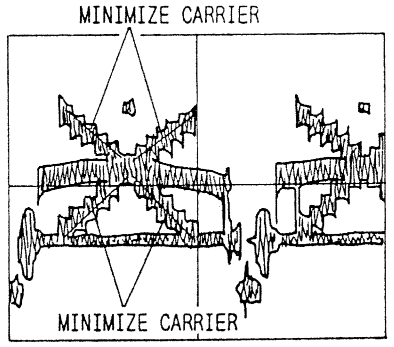


Fig. 4-11

15) Chroma Level Adjustment
(Figs. 4-12, 4-52)

This adjustment sets the chroma level.

Test Point:
TP205 (VIDEO OUT) Luma/Chroma
Adjust:
RM201-5 (CHROMA LEVEL) Process
Observe: Oscilloscope
Vectorscope

Adjustment using the oscilloscope
(Fig. 4-14)

1. Set the WHITE BAL switch to the AUTO position.
2. Attach the light balancing filter C10 (C8 + C2) over the lens.
3. Aim the camera at the colour chart.
4. Connect the oscilloscope to TP205.
5. Trigger the oscilloscope internally.
6. Adjust RM201-5 so that the red level becomes 140% ± 10% of the burst level.

Adjustment using the vectorscope
See Page 4-7

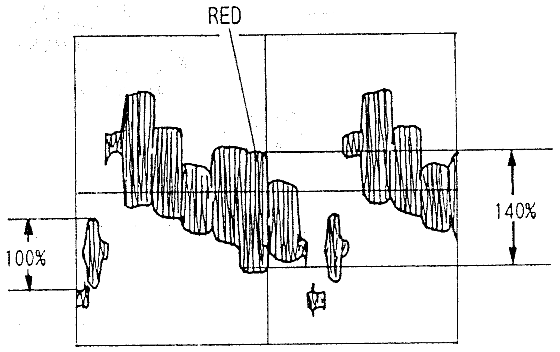


Fig. 4-12

2-7. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT

1) Deflection Yoke Position Adjustment
(Fig. 4-13)

This adjustment procedure eliminates picture tilt on the EVF display.

Adjust: Deflection yoke
Observe: EVF Display

1. Align the camera with the resolution chart making sure that both the camera and the chart are on the same plane.
2. Loosen the screw holding the deflection yoke.
3. Turn the deflection yoke so that the EVF picture (chart) is horizontal, matching the edges of the CRT.

Note: After adjustment is completed, tighten the deflection yoke retaining screw.

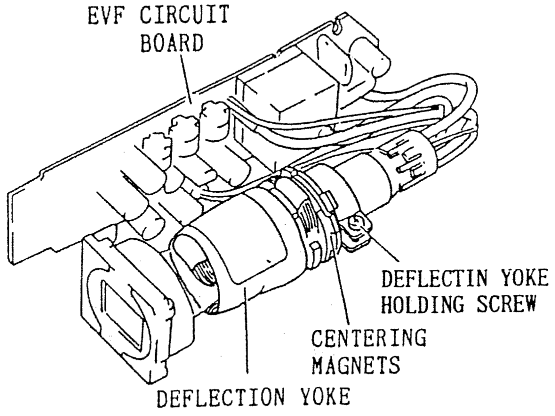


Fig. 4-13

2) EVF Centring Adjustment (Fig. 4-13)
This adjustment centres the image observed by the camera in the EVF display.

Adjust: Centring Magnets
Observe: EVF Display

1. Aim the camera at the resolution chart and align the centre of the chart with the centre of the camera lens.
2. Remove the locking paint from the centering magnets.
3. Adjust the centring magnets until the centre of the picture viewed by the camera is positioned in the centre of the EVF Display.

Note: After adjustment is completed, fix the centring magnets with lock paint.

3) EVF Vertical Size Adjustment
(Fig. 4-53)

This adjustment determines the vertical size of the image appearing in the EVF display.

Adjust: RT802 (V. SIZE) EVF
Observe: EVF Display

1. Aim the camera at the resolution chart, and line up the reference arrow head with the edge of the raster in the EVF.
2. Adjust RT802 so that the top and bottom edges of the chart match the top and edges of the CRT.

4) EVF Brightness Adjustment (Fig. 4-53)
This adjustment sets the brightness of the picture in the EVF display.

Adjust: RT805 (BRIGHT) EVF
Observe: EVF Display

1. Aim the camera at the gray scale chart.
2. Adjust RT805 to optimize the EVF picture.

5) EVF Focus Adjustment (Fig. 4-53)
This control adjusts for optimum focus of the electronic viewfinder picture.

Adjust: RT803 (FOCUS) EVF
Observe: EVF Display

1. Aim the camera at the resolution chart.
2. Adjust RT803 so that the EVF picture is clear.

2-8. AUTOFOCUS ADJUSTMENT

1) Sensor Position Adjustment
(Fig. 4-14)

Adjust: Sensor Adjustment Screw
Observe: Colour Video Monitor

1. Position the camera section two (2) meters from the backfocus adjustment chart and illuminate the object with approximately 100 lux.
2. Remove the autofocus adjustment cap.
3. Set the index on the focus ring to two (2) meters. Check that the chart is in focus. If it is not in focus, readjust the backfocus.
4. Set the zoom to telephoto end.
5. Set the FOCUS switch to AUTO position.
6. Operate the autofocus from the telephoto end to the wide-angle end and check that the chart is in focus with the index at two (2) meters.
7. If the chart is not in focus, turn the Sensor Adjustment Screw so the index on the focus ring is two (2) meters.

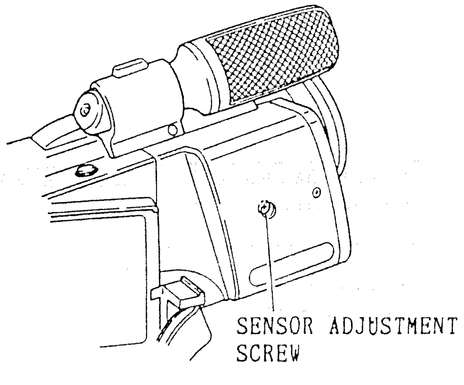


Fig. 4-14

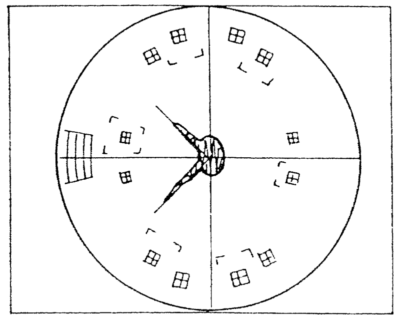


Fig. 4-15

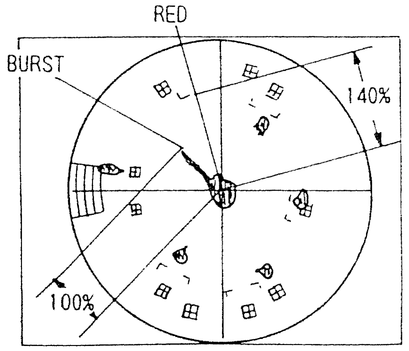


Fig. 4-16

2-9. ADJUSTMENT USING THE VECTORSCOPE

Note 1: Use the video output jack as the test point for all adjustments.
Note 2: Terminate the vectorscope with 75 ohm or connect the vectorscope to the video output jack terminated with 75 ohm.

ITEM No.	ADJUSTMENT NAME	SUBJECT	ADJUSTMENT POINT	PROCEDURE	Fig. No.
11)	Black Balance Adjustment	Lens Cap	RM201-1 RM202-4 RM202-5	1. Connect TP201-7 and TP201-8 to GND (TP201-10). 3. Adjust RM202-5 so that the bright spot is positioned at the centre. 4. Remove the ground (TP201-1) connections from TP201-7 and TP201-8. 5. Adjust RM201-1 and RM202-4 so that the bright spot is positioned at the centre.	 4-15 4-15
12)	White Balance Adjustment	Gray Scale	RM202-2 RM202-3	1. Adjust RM202-2 and RM202-3 so that the bright spot is positioned at the centre.	4-15
14)	Auto White Balance Adjustment	Gray Scale	RM201-4	1. Set the WHITE BAL switch to the AUTO position. 2. Attach the light balancing filter C10 (C8 + C2) over the lens. 3. Adjust RM201-4 so that the bright spot is positioned at the centre.	 4-15
15)	Chroma Level Adjustment	Colour Bar	RM201-5	1. Set the WHITE BAL switch to the AUTO position. 2. Attach the light balancing filter C10 (C8 + C2) over the lens. 3. Adjust RM201-5 so that the red vector is equal to more than 140% ± 10% when compared to the burst level.	 4-16

2-10. ADJUSTMENT COMPONENTS LOCATIONS

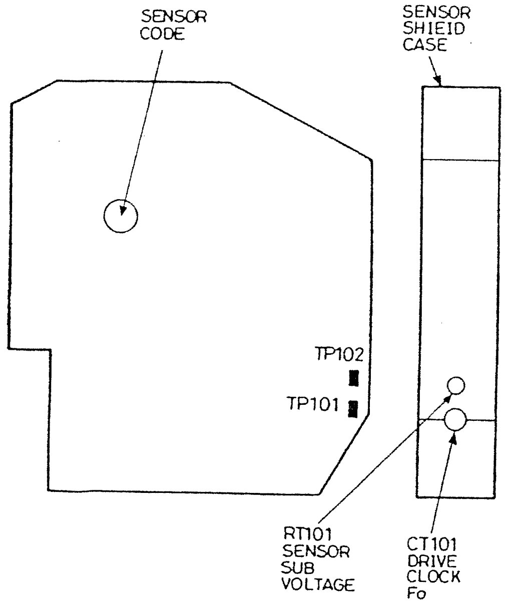

SENSOR CODE
SENSOR SHIEID CASE
TP102
TP101
RT101 SENSOR SUB VOLTAGE
CT101 DRIVE CLOCK Fo

Fig. 4-51 Sensor Circuit Board (Solder Side)

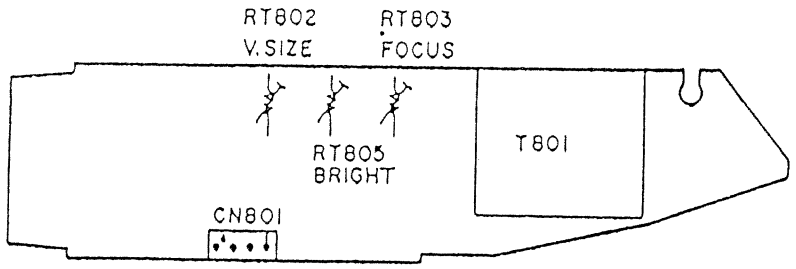

RT802 V.SIZE
RT803 FOCUS
RT805 BRIGHT
T801
CN801

Fig. 4-53 Electronic Viewfinder Circuit Board (Components Side)

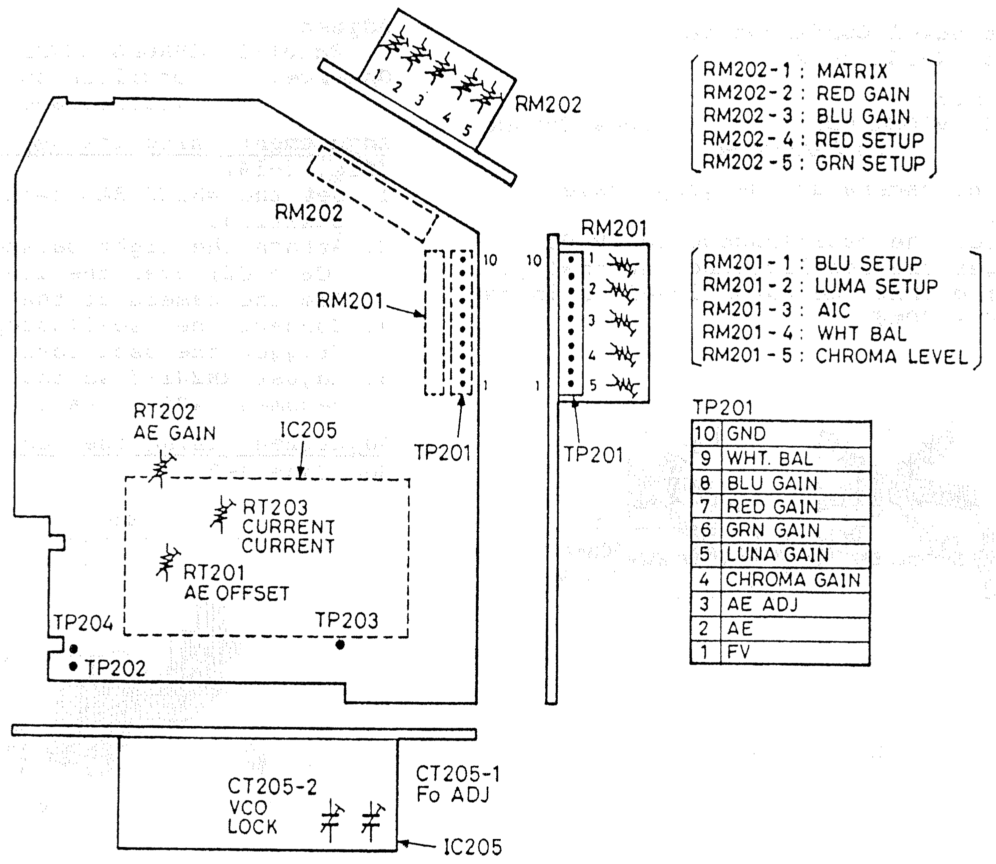

RM202
RM202-1 : MATRIX
RM202-2 : RED GAIN
RM202-3 : BLU GAIN
RM202-4 : RED SETUP
RM202-5 : GRN SETUP
RM201
RM201-1 : BLU SETUP
RM201-2 : LUMA SETUP
RM201-3 : AIC
RM201-4 : WHT BAL
RM201-5 : CHROMA LEVEL
TP201
10 GND
9 WHT. BAL
8 BLU GAIN
7 RED GAIN
6 GRN GAIN
5 LUNA GAIN
4 CHROMA GAIN
3 AE ADJ
2 AE
1 FV
RT202 AE GAIN
IC205
RT203 CURRENT CURRENT
RT201 AE OFFSET
TP204
TP202
TP203
CT205-2 VCO LOCK
CT205-1 Fo ADJ

Fig. 4-52 Process Circuit Board (Solder Side)

3. VTR SECTION ADJUSTMENT

3-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITIONS

Remove the right case and left case as described previously. Also remove the dew sensor from the A/C head base. (When the connector of the dew sensor is disconnected from the main circuit board, the unit enters the state in which condensation has been detected and the dew sensor is disabled.)

1. Motor Drive Circuit Board
2. Preamp Circuit Board
3. Luma/Chroma Circuit Board
4. Battery Jack Circuit Board (IC401)
5. Main Circuit Board
6. Zoom Switch
7. Function Switch
8. FM Audio Circuit Board

A. 30-Pin Extension Cable (Part No. 7099311). Connect the motor drive circuit board and main circuit board.
B. 16-Pin Extension Cable (Part No. 7099359). Connect the luma/chroma circuit board and preamp circuit board.
C. 14-Pin Extension Cable (Part No. 7099360). Connect the main circuit board and FM audio circuit board.

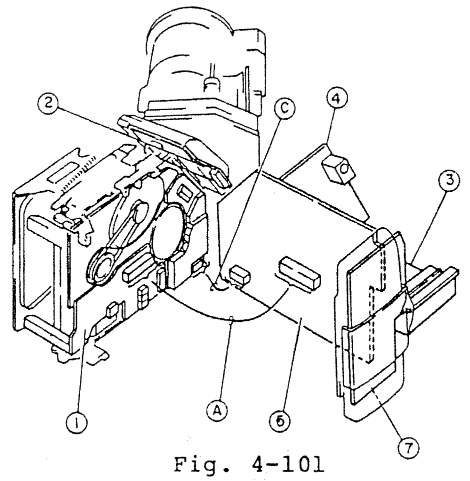


Fig. 4-101

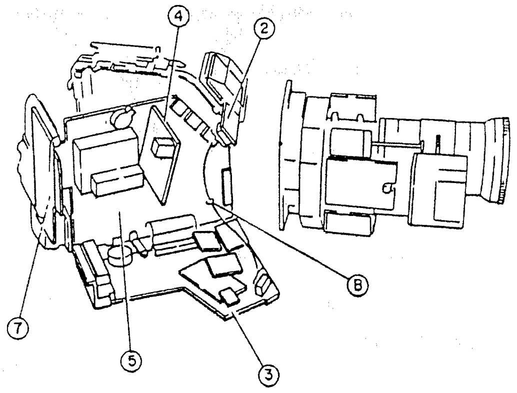


Fig. 4-102

3-2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

- Test Equipment
  - Oscilloscope (dual trace)
  - Digital Voltmeter (DVM)
  - Millivoltmeter
  - Frequency Counter
  - Colour Video Monitor
- Alignment Tape and Charts, etc.
  - Alignment Tape (50HMBE-3C)
  - Alignment Tape (50HMPE-3C)
  - Alignment Tape (HMAE-3C)
  - Blank Tape
  - S-VHS Blank Tape
  - Colour Bar Chart
  - 3100°K Light Box
  - DC Power Supply (9.6V)
  - Semi-Variable Resistor Adj Driver

3-3. ADJUSTMENT CONDITIONS

1) Connect this unit, a power supply and a colour video monitor as shown in Fig. 4-1.
2) Before adjusting the VTR section, check that the camera section has been adjusted correctly.
3) Point the camera at the chart to fill the video period when otherwise not specified.
4) Use the 10:1 probe of the oscilloscope when otherwise not specified.
5) When "REC mode" is specified, set the operate slide cover to CAM position and press the VTR start stop button on the battery jack circuit board (IC401) or autofocus circuit board.

3-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

Operate Slide Cover ············	"VTR" position
TRACKING control ·······	Centre Position
TAPE SPEED switch ······	"SP" position
S-VHS switch ···········	"OFF" position
MODE switch ············	"S" position
Shutter Speed ·······	"50 (1/50 sec)"
Exposure ············	"0"
FOCUS Switch ···········	"MAN" position
WHITE BAL switch ·······	"AUTO" position
IMAGE switch ···········	"POS" position

3-5. SYSTEM CONTROL SECTION

1) Display Position Adjustment

(Figs. 4-103, 4-151)

This adjustment regulates the horizontal width of the character display on the screen.

Adjust:
CT801 (DISPLAY POSITION) Main
Observe: Colour Video Monitor

1. Load the instrument with an alignment tape (50HMPE-3C) and play it back the monoscope video signal.
2. Press the COUNTER/TAPE REMAIN button to display the tape speed on the monitor screen.
3. Adjust CT801 so that remaining tape speed (SP) is positioned on the monitor screen as shown in Fig 4-103.

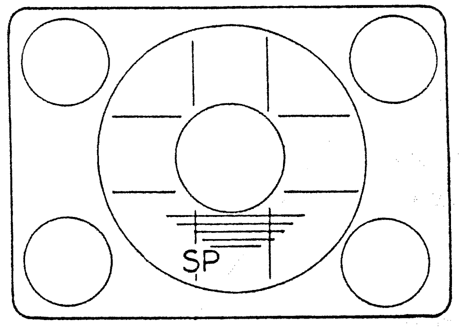


Fig. 4-103

3-6. SERVO SECTION

1) Head Switching Point Adjustment

(Figs. 4-104, 4-151, 4-152)

The pulse generator shifter determines the video head switching point during playback. Misadjustment of pulse generator shifter may cause head switching noise in the picture and/or vertical instability.

Test Point:
TP205 (VIDEO OUT) Luma/Chroma
Adjust:
RT602 (PG SHIFTER) Main
Observe: Oscilloscope

1. Load the instrument with an alignment tape (50HMBE-3C) and play it back the colour bar signal.
2. Connect the oscilloscope to TP205 (0.5V/50μsec.cm).
3. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the luma/chroma circuit board.)
4. Set the oscilloscope to (-) slope and adjust RT602 so that the trailing edge of the SW 25Hz signal is placed 7.5H ± 0.5H (horizontal) lines before the start of CH-1 vertical sync.
5. Set the oscilloscope to (+) slope and confirm the leading edge of the SW 25Hz signal is 7.5H ± 0.5H (horizontal) lines before the start of CH-2 vertical sync.

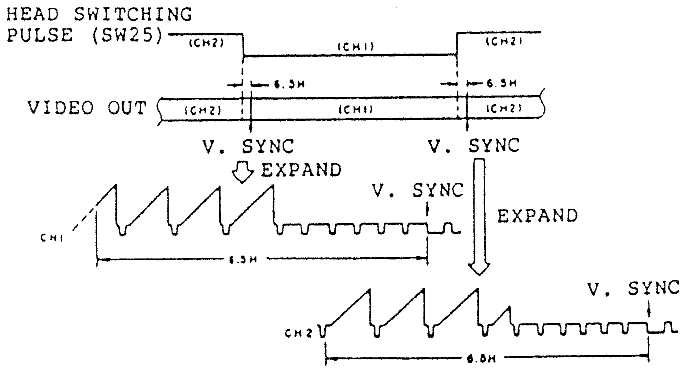


Fig. 4-104

2) Tracking Preset Adjustment

(Figs. 4-105, 4-151, 4-152)

This adjustment is performed to obtain correct tracking during playback of a tape recorded on the same instrument. When this adjustment is incomplete, noise may conspicuous with the tracking control placed in the detent position or noise may not be removed by the tracking control.

Test Point:
TP205 (VIDEO OUT) Luma/Chroma
PG601-1 Main
Adjust:
RT601 (TRACKING PRESET) Luma/Chroma
Observe: Oscilloscope

1. Set the TRACKING control to the mechanical centre (centre click) position.
2. Aim the camera at the colour bar chart.
3. Using a blank tape, make a recording and play it back.
4. Connect PG601-5 to PG605-6.
5. Connect CH-1 of the oscilloscope to TP205 (5V/0.5msec.cm).
6. Connect CH-2 of the oscilloscope to PG601-1 (1V/0.5msec.cm).
7. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the luma/chroma circuit board.)
8. Set the oscilloscope to the (-) slope.
9. Adjust RT602 so that the CTL pulse and vertical sync of the video signal match.
10. Remove the PG601-5 connections from PG601-6.

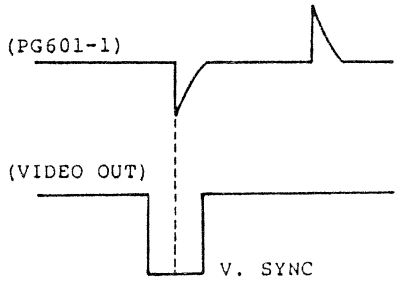


Fig. 4-105

3-7. LUMA/CHROMA SECTION

1) Record Luma/Chroma Level Adjustment

(Figs. 4-106, 4-107, 4-152, 4-153)

Optimum record colour level is regulated by this adjustment. If the record chroma level is too high, diamond beats can be seen in the screen. If the levels is too low, the colour is degraded.

Test Point: TP101 Preamp
Adjust:
RT202 (REC CHROMA LEVEL) Luma/Chroma
RT201 (REC LUMA LEVEL) Luma/Chroma
Observe: Oscilloscope

1. Aim the camera at the colour bar chart.
2. Connect the oscilloscope to TP101. (Use the shield cover of the preamp circuit board as ground.) (50mV/5msec.cm)
3. Trigger the oscilloscope at SW 12.5Hz. (Use TP201 on the luma/chroma circuit board.)
4. Set the operate slide cover to the CAM. position.
5. Set the S-VHS switch to the AUTO position.
6. Set the TAPE SPEED switch to the LP position.
7. Load the instrument with a S-VHS blank tape.
8. Place the instrument in the "REC" mode.
9. Adjust RT201 to minimize the record luminance level.
10. Adjust RT202 so that the record chroma level is 22.5mV ± 2.5mV.
11. Adjust RT201 so that the record luminance level is 130mV ± 5mV.
12. Set the operate slide cover to the VTR position.
13. Set the S-VHS switch to the OFF position.
14. Set the TAPE SPEED switch to the SP position.

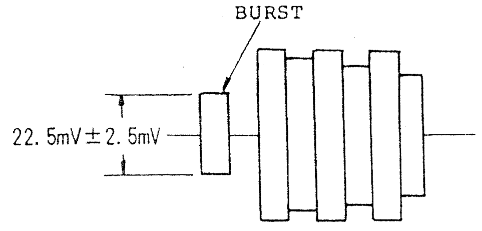


Fig. 4-106

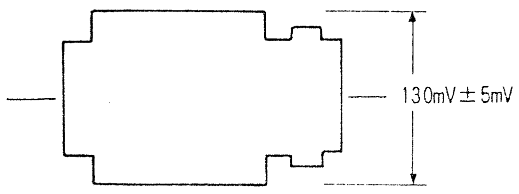


Fig. 4-107

2) 1H Delay Line Output Level Adjustment

(Figs. 4-108, 4-152)

This adjustment makes the input and output levels of the 1H delay Line the same. If this adjustment is incomplete, switching noise is conspicuous when dropout is compensated.

Test Point:
IC201-10 Luma/Chroma
Adjust:
RT203 Luma/Chroma
(1H DELAY LINE OUTPUT LEVEL)
Observe: Oscilloscope

1. Load the instrument with an alignment tape (50HMBE-3C) and play it back the colour bar signal.
2. Connect the oscilloscope to IC201-10. (0.2V/5msec.cm).
3. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the luma/chroma circuit board.)
4. Adjust RT203 to minimize noise at the waveform.

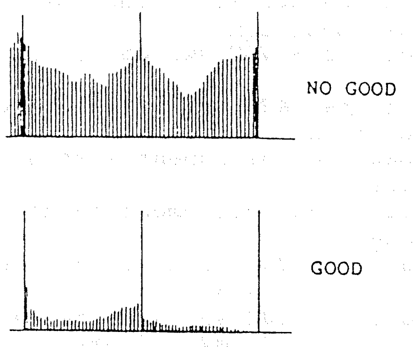


Fig. 4-108

3-8. AUDIO SECTION

1) Audio Bias Level Adjustment

(Fig. 4-151)

This adjustment optimizes the audio record bias.

When the audio record bias is too low, high frequencies are increased resulting in distortion. When the level is too high, high frequencies are attenuated.

Test Point:	TP401	Main
	TP402	Main
Adjust:		
	RT401 (AUDIO BIAS LEVEL)	Main
Observe:	Millivoltmeter	

Note: Perform this adjustment without applying an audio signal.

1. Connect the millivoltmeter to TP401. (Use TP402 as ground.)
2. Set the operate slide cover to the CAM position.
3. Set the S-VHS switch to the AUTO position.
4. Load the instrument with a S-VHS blank tape.
5. Place the instrument in the "REC" mode.
6. Adjust RT401 for 2.2mV ± 0.1mV.

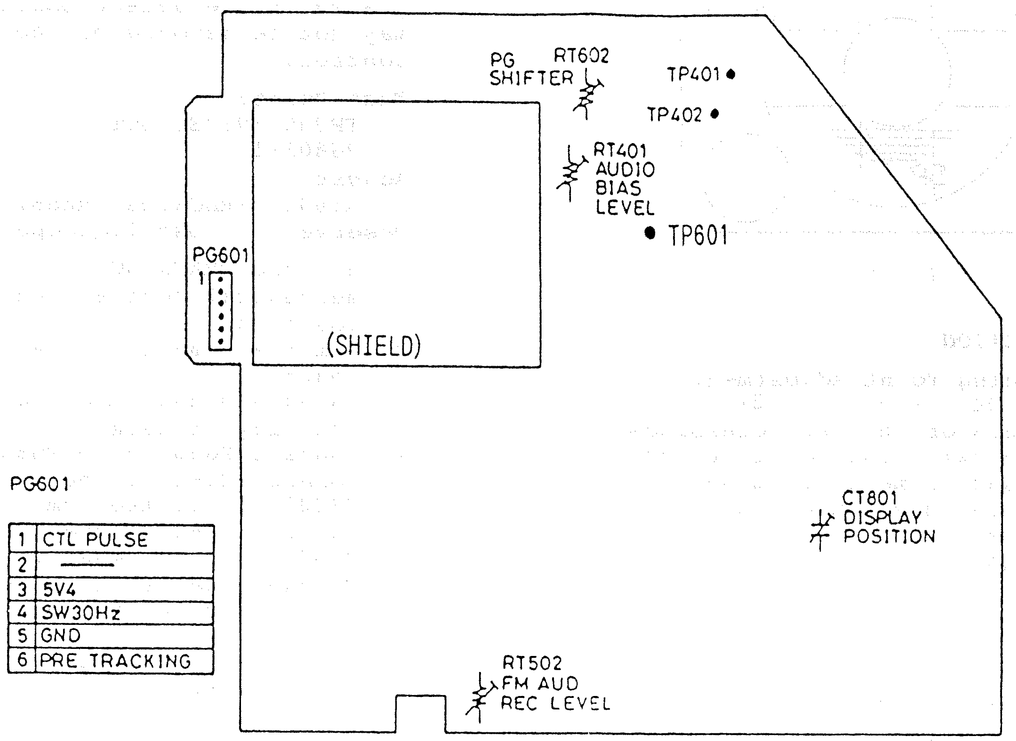
2) Record FM Audio Level Adjustment

(Figs. 4-151, 4-154)

Test Point:	TP001	FM Audio
Adjust:		
	RT502 (FM AUDIO REC LEVEL)	Main
Observe:	Oscilloscope	

1. Connect the oscilloscope to TP001.
2. Set the operate slide cover to the CAM position.
3. Set the S-VHS switch to the AUTO position.
4. Load the instrument with a S-VHS blank tape.
5. Place the instrument in the "REC" mode.
6. Adjust RT502 for 210mV ± 10mV.

3-9. ADJUSTMENT COMPONENTS LOCATIONS


PG SHIFTER
RT602
TP401
TP402
RT401 AUDIO BIAS LEVEL
TP601
PG601
1
(SHIELD)
CT801 DISPLAY POSITION
RT502 FM AUD REC LEVEL

PG601

1	CTL PULSE
2	———
3	5V4
4	SW30Hz
5	GND
6	PRE TRACKING

Fig. 4-151 Main Circuit Board (Components Side)

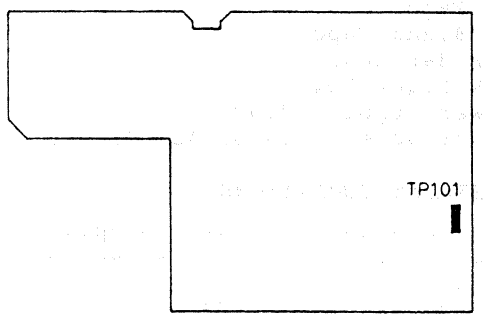


Fig. 4-153 Preamp Circuit Board (Solder Side)

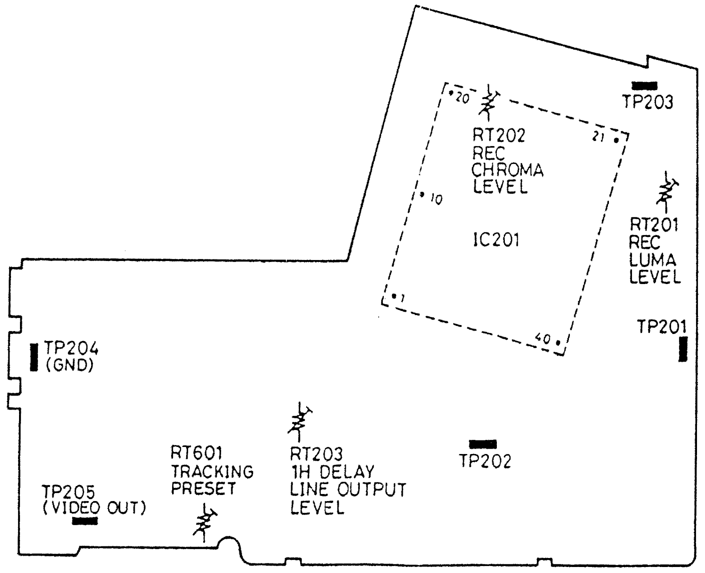

TP203
20
RT202 REC CHROMA LEVEL
21
10
IC201
RT201 REC LUMA LEVEL
1
40
TP201
TP204 (GND)
RT601 TRACKING PRESET
RT203 1H DELAY LINE OUTPUT LEVEL
TP202
TP205 (VIDEO OUT)

Fig. 4-152 Luma/Chroma Circuit Board (Solder Side)

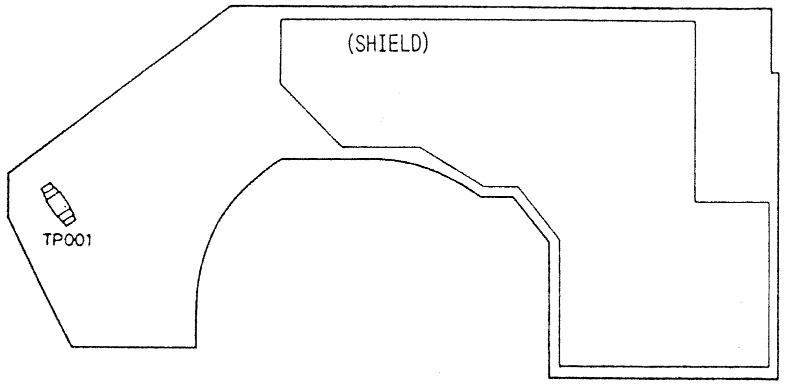

(SHIELD)
TP001

Fig. 4-154 FM Audio Circuit Board (Components Side)

CHAPTER 5 SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS

WHEN USING THIS SERVICE REFERENCE MATERIAL

1. Markings in Schematic and Circuit Board Diagrams

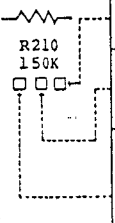
(1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.

(2) Parts with marks Ⓩ in the circuit board diagrams are leadless jumpers.

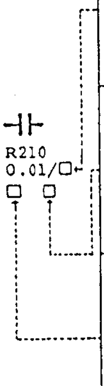
2. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables for reading abbreviations to replace parts correctly.

2-1. Resistors

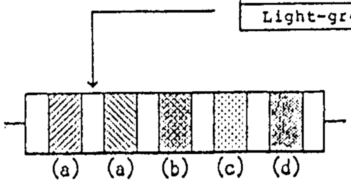
 R210 150K	Value	No indication .... ohm K .... kohm
	Tolerance	No indication .... ±5% K .... ±10% M .... ±20%
	Power capacitance	No indication .... 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted)
	Type	No indication .. Carbon film fixed RC .... Carbon solid RW .... Power-type wire-wound solid RS .... Metal oxide film solid RN .... Metal film solid
Example R210 150K .... 150 kohm, carbon solid RC.1/2.K 1/2W, ±10%		

2-2. Capacitors

 R210 0.01/□	Value	No indication .... µF P .... PF
	Dielectric resistance	No indication .... 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
	Tolerances	No indication .... ±10% J .... ±5% M .... ±20% C .... ±0.25PF Z .... +80%/-20% (No indication with electrolytic capacitors (excluding tantalum and high stability electrolytic capacitors)
	Type	No indication .. Ceramic, general electrolytic (see circuit symbol to distinct from ceramic) MYL .... Mylar (Polyester film) STY .... Styrol TA .... Tantalum KU .... High stability electrolytic MP .... Metalized paper
Example C210 0.01/25 .... Mylar, 0.01µF, 25WV MYL.J ±5%		

3. How to Read Capacitance of Resistance-Type Capacitors and Coils

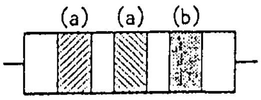
3-1 Capacitors



Color	Related voltage
Pink	25V
Light-green	50V

Color	Capacitance (a)	Multiplier (b)	Tolerance (c)	Characteristics (d)
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6	10^6		
Purple	7			
Gray	8		±30%	High permittivity type
White	9			For temperature compensation
Gold			±5%	
Silver			±10%	

3-2 Coils



4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.

(2) High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.

(3) The human body and clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so workers should be grounded.

(4) Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

5. Measure the voltages at each section with the negative side of power supply as a reference.

The voltages in the camera section are measured with the VTR in the record mode, and those in the VTR section are measured in the record and playback modes.

- * Voltages in ( ) are in the record mode.
- * One voltage value is common for recording and playback.

LEADLESS COMPONENT IDENTIFICATION

1. Leadless Transistors

The leadless transistor number is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three letters.

Letter	Transistor Number	Letter	Transistor Number
A	2SB709	H	2SA1036K
A(R)	2SB1218R(AR)	I	2SB792
A(S)	2SB766S(AS)	J	2SC2735
A(J)	2SB1000J(AJ)	K	2SA1036
B	2SC1621	K(P)	2SC2413P(KP)
B(J)	2SB1001J(BJ)	L	2SC2462
B(R)	2SC4081R(BR)	M	2SA1052
B(R)	2SC2412AR(BR)	N	2SC1653
B(S)	2SC2412KS(BS)	N(E)	2SD1306E(NE)
C	2SA1122	P	2SD814
C(L)	2SD999L(CL)	P(E)	2SA1171E(PE)
C(R)	2SB710R(CR)	Q	2SC2620
C(R)	2SC4097R(CR)	Q(O)	2SC2714O(QO)
C(R)	2SC2411R(CR)	R	2SC2618
C(Q)	2SC2411KQ(CQ)	S	2SA1121
D	2SC2463	S(Q)	2SC3082KQ(SQ)
D(L)	2SB798L(DL)	U	2SC2404
E	2SA1022	W	2SD602
F	2SC2619	Y	2SD601
F(S)	2SA1037KS(FS)	Y(R)	2SD1819R(YR)
F(R)	2SA1576R(FR)	Z	2SD874
AA(S)	2SD1757KS(AAS)	DB(R)	2SD1766R(DBR)
BC(R)	2SB1188R(BCR)	IR(D)	2SA1484D(IRD)
BF(R)	2SB1308R(BFR)		
1D(T)	2SD1328T(1DT)	1C(R)	2SB902R(1CR)
B(3)	2SC1621(3)(B3)	L(6)	MMBC1623(6)(L6)
C(7)	2SA811(7)(C7)	L(6)	2SC1623(6)(L6)
L(7)	2SC2812(7)(L7)	F(2)	2SC1009(2)(F2)
M(6)	2SA812(6)(M6)	M(6)	2SA1179(6)(M6)
N(4)	2SC1653(4)(N4)		
D(16)	2SC1622A(16)(D16)	R(25)	2SC3356(25)(R25)
R(35)	2SC3583(35)(R35)	R(45)	2SC3585(45)(R45)
Y(25)	NTM3906(25)(Y25)		
1(D)	2SC3127D(1D)		
S1	FMS1	S2	FMS2
T1	IMT1	W1	FMW1
W2	FMW2	W3	FMW3
X1	IMX1	Y1	FMY1
Y3	FMY3	Z1	IMZ1
Z2	IMZ2		
4R	XN1C301	5H	XN4501
5K	XN4401		
Digital Transistor			
04	DTC114TK	06	DTC144TK
13	DTA143EK	15	DTA124K
15(s)	DTA124EU	16	DTA144EK
16(s)	DTA144EU	23	DTC143EK
24	DTC114EK	24(s)	DTC114EU
25	DTC124K	25(s)	DTC124EU
26	DTC144K	26(s)	DTC144EU
33	DTA143XK	43	DTC143XK
52	DTA123YK	64	DTC114YK
6B	UN5112	8B	UN5212
F52	DTB123	G21	DTD113ZK
H03	DTC343TK	H27	DTC363EK
R31	FP1L2Q		
A1	FMA1	A2	FMA2
B2	IMB2	C2	FMC2
D2	IMD2	G1	FMG1
G2	FMG2	G5	FMG5
H2	IMH2		

Letter	Transistor Number	Letter	Transistor Number
FET			
G	2SK302	J	2SK208
K	2SK160	W	2SK322
X	2SK157	X(4)	2SK94(4)(X4)
X(17)	2SK425(17)(X17)		
Y	2SK197	Z	2SK217
XA	2SK980		
3	2SK620	3(O)	2SK621(O)(3O)
1M	2SA1052	1F	2SK321
1K	2SK316	2B	2SK374

* "(s)" in the above table shows a component with smaller size.
* Codes on the digital transistors show only the transistor numbers.

(1) Identification for two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
CD	2SA1122D
LD	2SC2462D

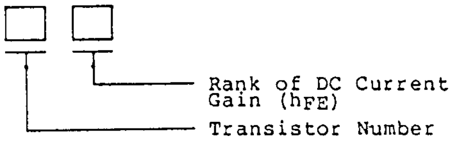


Fig.5-1 Leadless Transistor Code

(2) Identification for two types of one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Transistor Number
L	2SC1623

Example:

Code	Number
L5	2SC1623(5)
L6	2SC1623(6)

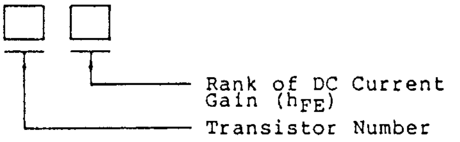
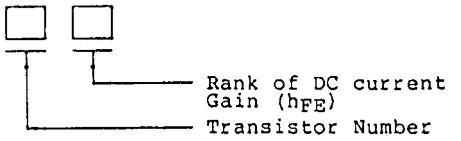


Fig.5-2 Leadless Transistor Code

Example:

Code	Number
1D	2SC3127D



Note: Codes S1, S2, T1, W1, W2, W3, X1, Y1, Y3, Z1 and Z2 show only the transistor numbers.

Fig.5-3 Leadless Transistor Code

(3) Identification for one numeral and two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
1FQ	2SK321Q

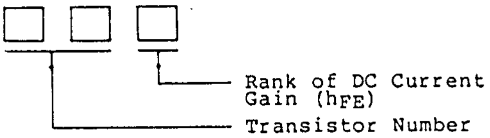


Fig.5-4 Leadless Transistor Code

(4) Identification for one letter and two numerals.
Use this coce and the following chart for component identification.

Example:

Code	Number
R25	2SC3356

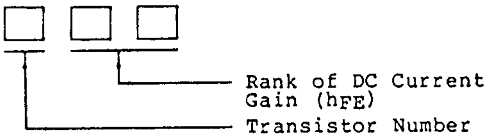


Fig. 5-5 Leadless Transistor Code

(5) Identification for two letters and one numeral.
Use this code and the following chart for component identification.

Example:

Code	Number
DV5	2SD596

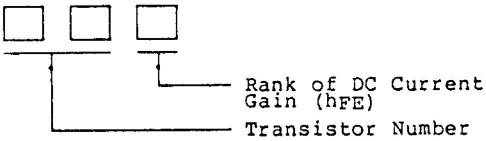


Fig. 5-6 Leadless Transistor Code

(6) Identification for three letters.
Use this code and the following chart for component identification.

Example:

Code	Number
AAS	2SD1757KS

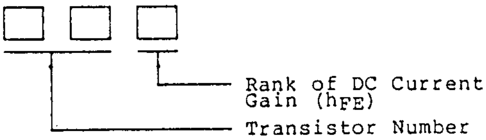


Fig. 5-7 Leadless Transistor Code

2. Leadless Diodes
Leadless diode numbers are indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three numerals.
Use this code and the following chart for component identification.

Code	Diode Number	Code	Diode Number
BE	1SV172		
MC	MA153	MC(s)	MA143
MH	MA151K	MH(s)	MA141K
MN	MA151WA	MN(s)	MA141WA
MO	MA152WA		
MT	MA151WK	MT(s)	MA141WK
MU	MA152WK		
M1D	MA160	M1P	MA714
M2A	MA122	S1A	1SR143
N	DAN202K	Z	DA106K
A3	1S2835	A5	1S2837
C1	HSM88S	C2	HSM276S
1A	MA110		
3.0L	MA3030L	4.3L	MA3043L
4.7M	MA3047M	5.1M	MA3051M
5.1L	MA3051L	5.6M	MA3056M
6.2L	MA3062L	6.8M	MA3068
6.8M	MA3068M	7.5H	MA3075H
7.5L	MA3075L	8.2M	MA3082M
9.1M	MA3091	9.1M	MA3091M
10L	MA3100L	56M	MA3056M
75L	MA3075L	82M	MA3082M
91M	MA3091M		
20	HZM6-B	27	RD2.7M-B
30	RD3.0M-B	51	RD5.1M-B2
56	RD5.6M-B	91	RD9.1M-B
102	RD10M-B2	122	RD12M-B2
163	RD16M-B3	182	RD18M-B2
271	RD2.7M-B	272	RD2.7M-B2
301	RD3.0M-B	362	RD3.6M-B2
391	RD3.9M-B1	512	RD5.1M-B2
561	RD5.6M-B	621	RD6.2M-B1
681	RD6.8M-B	683	RD6.8M-B3
911	RD9.1M-B		

* "(s)" in the above table shows a component with smaller size.

3. Leadless Resistors
The resistor value is indicated on the surface of the component, using a three-digit numbers, or one letter and one numeral.

(1) Identification for three digit numbers.
Read this code following the same procedure as when reading the color code on discrete resistors.

Example:

Code	Value
330	33×10^0 = 33 ohms
561	56×10^1 = 560 ohms
123	12×10^3 = 12K ohms
1R2	1 + 0.2 = 1.2 ohms

(R: Decimal point)

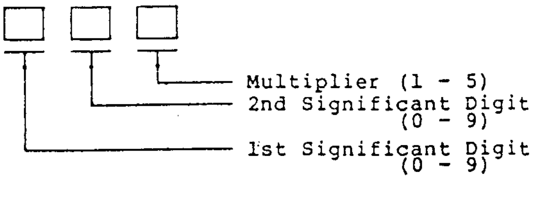


Fig. 5-8 Leadless Resistor Code

(2) Identification for one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example:

Code	Value
A1	$1 \times 10^1 = 10$ ohms
G2	$1.8 \times 10^2 = 180$ ohms
L3	$2.7 \times 10^3 = 2700$ ohms
S4	$4.7 \times 10^4 =$ 47K ohms
W5	$6.8 \times 10^5 =$ 680K ohms

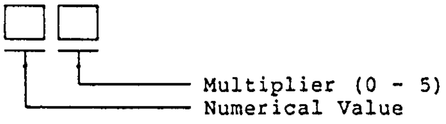
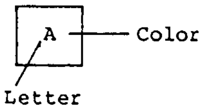


Fig. 5-9 Leadless Resistor Code

4. Leadless Capacitors

The capacitance value is indicated on the surface of the component, using body color and one letter, or one letter and one numeral.

(1) Identification for body color and one letter.

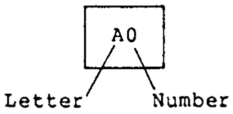


Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
				U	560
Black	A	10(PF)		W	680
	C	12		Y	820
	E	15			
	G	18	White	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68			
	Y	82	Green	A	0.01(μF)
				E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1(μF)

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

(2) Identification for one letter and one numeral.



Letter /Number	Value	Letter /Number	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
		U2	560
A1	10(PF)	W2	680
C1	12	Y2	820
E1	15		
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56		
W1	68	A4	0.01(μF)
Y1	82	E4	0.015
		J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

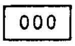
Example:

Letter /Number	Value
A0	1PF
A1	10PF

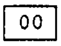
5. Leadless Jumper

The leadless jumper is indicated as shown below.

(1)

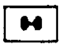


(2)

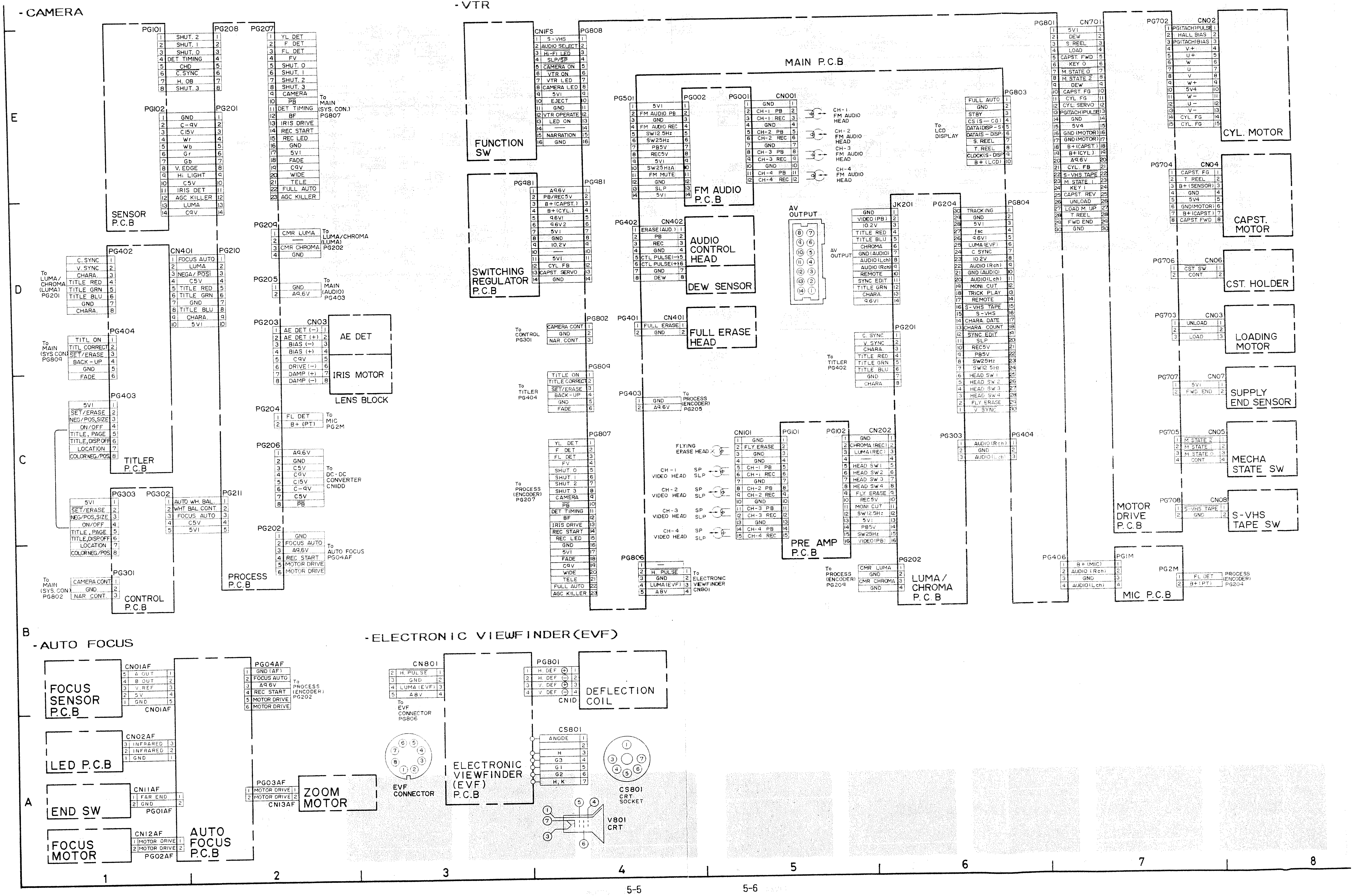


(3)

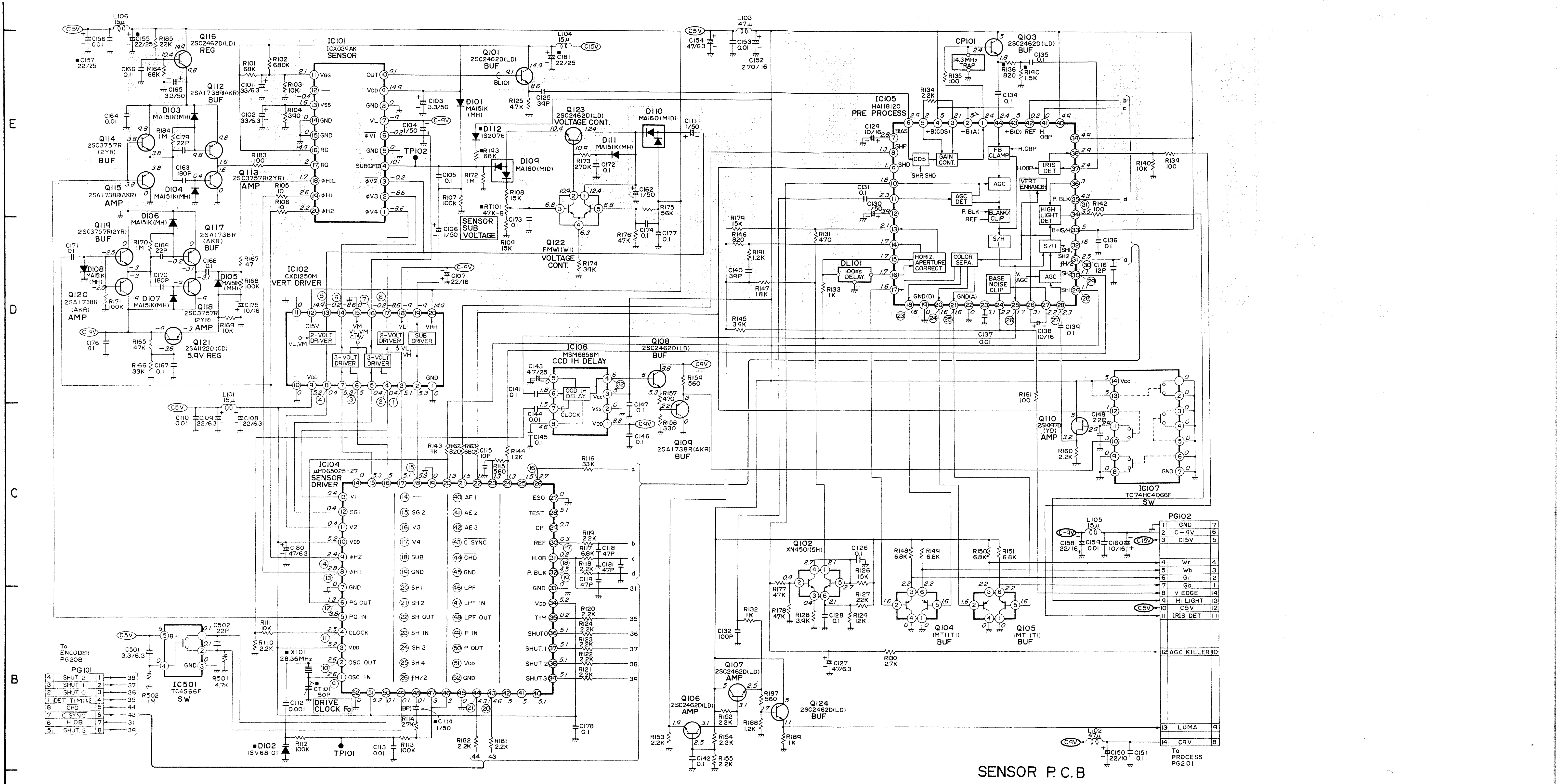
(4)



CIRCUIT BOARD CONNECTION DIAGRAM

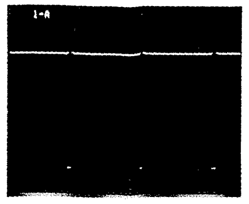

- CAMERA
E
D
C
B
A
SENSOR P.C.B
PG101
1 SHUT. 2
2 SHUT. 1
3 SHUT. 0
4 DET TIMING
5 CHD
6 C.SYNC
7 H. OB
8 SHUT. 3
PG208
PG102
1 GND
2 C-9V
3 C15V
4 Wr
5 Wb
6 Gr
7 Gb
8 V. EDGE
9 Hi LIGHT
10 C5V
11 IRIS DET
12 AGC KILLER
13 LUMA
14 C9V
PG201
PG207
1 YL DET
2 F DET
3 FL DET
4 FV
5 SHUT. 0
6 SHUT. 1
7 SHUT. 2
8 SHUT. 3
9 CAMERA
10 PB
11 DET TIMING
12 BF
13 IRIS DRIVE
14 REC START
15 REC LED
16 GND
17 5V1
18 FADE
19 C9V
20 WIDE
21 TELE
22 FULL AUTO
23 AGC KILLER
To MAIN (SYS. CON.) PG807
PG209
1 CMR LUMA
2 —
3 CMR CHROMA
4 GND
To LUMA/CHROMA (LUMA) PG202
PG205
1 GND
2 A9.6V
To MAIN (AUDIO) PG403
PG203
CN03
1 AE DET (−)
2 AE DET (+)
3 BIAS (−)
4 BIAS (+)
5 C9V
6 DRIVE (−)
7 DAMP (+)
8 DAMP (−)
AE DET
IRIS MOTOR
LENS BLOCK
PG204
1 FL DET
2 B+ (PT)
To MIC PG2M
PG206
1 A9.6V
2 GND
3 C5V
4 C9V
5 C15V
6 C−9V
7 C5V
8 PB
To DC-DC CONVERTER CN1DD
PG202
1 GND
2 FOCUS AUTO
3 A9.6V
4 REC START
5 MOTOR DRIVE
6 MOTOR DRIVE
To AUTO FOCUS PG04AF
PROCESS P.C.B
PG402
1 C. SYNC
2 V. SYNC
3 CHARA.
4 TITLE RED
5 TITLE GRN
6 TITLE BLU
7 GND
8 CHARA.
To LUMA/CHROMA (LUMA) PG201
CN401
1 FOCUS AUTO
2 LUMA
3 NEGA/POSI
4 C5V
5 TITLE RED
6 TITLE GRN
7 GND
8 TITLE BLU
9 CHARA.
10 5V1
PG210
PG404
1 TITL ON
2 TITL CORRECT
3 SET/ERASE
4 BACK-UP
5 GND
6 FADE
To MAIN (SYS.CON) PG809
PG403
1 5V1
2 SET/ERASE
3 NEG/POS,SIZE
4 ON/OFF
5 TITLE, PAGE
6 TITLE,DISP.OFF
7 LOCATION
8 COLOR NEG./POS.
TITLER P.C.B
PG303
1 5V1
2 SET/ERASE
3 NEG/POS,SIZE
4 ON/OFF
5 TITLE, PAGE
6 TITLE,DISP.OFF
7 LOCATION
8 COLOR NEG./POS.
PG302
1 AUTO WH. BAL.
2 WHT BAL.CONT.
3 FOCUS AUTO
4 C5V
5 5V1
PG211
PG301
1 CAMERA CONT.
2 GND
3 NAR. CONT.
To MAIN (SYS. CON) PG802
CONTROL P.C.B
- AUTO FOCUS
FOCUS SENSOR P.C.B
CN01AF
5 A OUT 1
4 B OUT 2
3 V.REF 3
2 5V 4
1 GND 5
CN01AF
LED P.C.B
CN02AF
3 INFRARED 3
2 INFRARED 2
1 GND 1
END SW
CN11AF
1 FAR END 1
2 GND 2
PG01AF
FOCUS MOTOR
CN12AF
1 MOTOR DRIVE 1
2 MOTOR DRIVE 2
PG02AF
AUTO FOCUS P.C.B
PG04AF
1 GND (AF)
2 FOCUS AUTO
3 A9.6V
4 REC START
5 MOTOR DRIVE
6 MOTOR DRIVE
To PROCESS (ENCODER) PG202
PG03AF
1 MOTOR DRIVE 1
2 MOTOR DRIVE 2
CN13AF
ZOOM MOTOR
- ELECTRONIC VIEWFINDER (EVF)
CN801
2 H. PULSE 1
3 GND 2
4 LUMA (EVF) 3
5 A8V 4
To EVF CONNECTOR PG806
⑥ ⑤ ⑦ ④ ⑧ ③ ① ②
EVF CONNECTOR
ELECTRONIC VIEWFINDER (EVF) P.C.B
PG801
1 H. DEF ⊕ 1
2 H. DEF ⊖ 2
3 V. DEF ⊕ 3
4 V. DEF ⊖ 4
CN1D
DEFLECTION COIL
CS801
ANODE 1
2
H 3
G3 4
G1 5
G2 6
H, K 7
① ③ ⑦ ④ ⑤ ⑥
CS801 CRT SOCKET
① ⑦ ③ ⑤ ④ ⑥
V801 CRT
- VTR
FUNCTION SW
CNIFS
1 S-VHS
2 AUDIO SELECT
3 Hi-Fi LED
4 SLP/SP
5 CAMERA ON
6 VTR ON
7 VTR LED
8 CAMERA LED
9 5V1
10 EJECT
11 GND
12 VTR OPERATE
13 LED ON
14 —
15 NARRATION
16 GND
PG808
SWITCHING REGULATOR P.C.B
PG981
1 A9.6V
2 PB/REC5V
3 B+ (CAPST.)
4 B+ (CYL.)
5 9.6V1
6 9.6V2
7 5V1
8 GND
9 10.2V
10 —
11 5V1
12 CYL. FB
13 CAPST. SERVO
14 GND
PG981
PG802
1 CAMERA CONT.
2 GND
3 NAR. CONT.
To CONTROL PG301
PG809
1 TITLE ON
2 TITLE CORRECT
3 SET/ERASE
4 BACK-UP
5 GND
6 FADE
To TITLER PG404
PG807
1 YL DET
2 F DET
3 FL DET
4 FV
5 SHUT. 0
6 SHUT. 1
7 SHUT. 2
8 SHUT. 3
9 CAMERA
10 PB
11 DET TIMING
12 BF
13 IRIS DRIVE
14 REC START
15 REC LED
16 GND
17 5V1
18 FADE
19 C9V
20 WIDE
21 TELE
22 FULL AUTO
23 AGC KILLER
To PROCESS (ENCODER) PG207
MAIN P.C.B
PG501
1 5V1
2 FM AUDIO PB
3 GND
4 FM AUDIO REC
5 SW12.5Hz
6 SW25Hz
7 PB5V
8 REC5V
9 5V1
10 SW25HzA
11 FM MUTE
12 GND
13 SLP
14 5V1
PG002
FM AUDIO P.C.B
PG001
CN001
1 GND
2 CH-1 PB
3 CH-1 REC
4 GND
5 CH-2 PB
6 CH-2 REC
7 GND
8 CH-3 PB
9 CH-3 REC
10 GND
11 CH-4 PB
12 CH-4 REC
CH-1 FM AUDIO HEAD
CH-2 FM AUDIO HEAD
CH-3 FM AUDIO HEAD
CH-4 FM AUDIO HEAD
PG402
CN402
1 ERASE (AUD.)
2 PB
3 REC
4 GND
5 CTL PULSE(−)
6 CTL PULSE(+)
7 GND
8 DEW
AUDIO CONTROL HEAD
DEW SENSOR
PG401
CN401
1 FULL ERASE
2 GND
FULL ERASE HEAD
PG403
1 GND
2 A9.6V
To PROCESS (ENCODER) PG205
AV OUTPUT
⑧ ⑦ ⑨ ⑥ ⑩ ⑤ ⑪ ④ ⑫ ③ ⑬ ② ⑭ ①
AV OUTPUT
JK201
1 GND
2 VIDEO (PB)
3 10.2V
4 TITLE RED
5 TITLE BLU
6 CHROMA
7 GND (AUDIO)
8 AUDIO (Lch)
9 AUDIO (Rch)
10 REMOTE
11 SYNC EDIT
12 TITLE GRN
13 CHARA.
14 9.6V1
PG201
1 C. SYNC
2 V. SYNC
3 CHARA.
4 TITLE RED
5 TITLE GRN
6 TITLE BLU
7 GND
8 CHARA.
To TITLER PG402
PG803
1 FULL AUTO
2 GND
3 STBY
4 CS (S — CG)
5 DATA (DISP − S)
6 DATA (S − DISP)
7 S. REEL
8 T. REEL
9 CLOCK (S − DISP)
10 B+ (LCD)
To LCD DISPLAY
PG204
PG804
30 TRACKING 1
29 GND 2
28 5V1 3
27 fsc 4
26 9.6V1 5
25 LUMA (EVF) 6
24 C. SYNC 7
23 10.2V 8
22 AUDIO (Rch) 9
21 GND (AUDIO) 10
20 AUDIO (Lch) 11
19 MONI. CUT 12
18 TRICK PLAY 13
17 REMOTE 14
16 S-VHS TAPE 15
15 S-VHS 16
14 CHARA. DATE 17
13 CHARA. COUNT 18
12 SYNC EDIT 19
11 SLP 20
10 REC5V 21
9 PB5V 22
8 SW25Hz 23
7 SW12.5Hz 24
6 HEAD SW 1 25
5 HEAD SW 2 26
4 HEAD SW 3 27
3 HEAD SW 4 28
2 FLY. ERASE 29
1 V. SYNC 30
PG303
1 AUDIO (Rch)
2 GND
3 AUDIO (Lch)
PG404
FLYING ERASE HEAD
CH-1 VIDEO HEAD SP SLP
CH-2 VIDEO HEAD SP SLP
CH-3 VIDEO HEAD SP SLP
CH-4 VIDEO HEAD SP SLP
CN101
1 GND
2 FLY. ERASE
3 GND
4 GND
5 CH-1 PB
6 CH-1 REC
7 GND
8 CH-2 PB
9 CH-2 REC
10 GND
11 CH-3 PB
12 CH-3 REC
13 GND
14 CH-4 PB
15 CH-4 REC
PG101
PRE AMP P.C.B
PG102
CN202
1 GND
2 CHROMA (REC)
3 LUMA (REC)
4 —
5 HEAD SW 1
6 HEAD SW 2
7 HEAD SW 3
8 HEAD SW 4
9 FLY. ERASE
10 REC5V
11 MONI. CUT
12 SW12.5Hz
13 5V1
14 PB5V
15 SW25Hz
16 VIDEO (PB)
PG806
1 —
2 H. PULSE 1
3 GND 2
4 LUMA (EVF) 3
5 A8V 4
To ELECTRONIC VIEWFINDER CN801
PG202
1 CMR LUMA
2 GND
3 CMR CHROMA
4 GND
To PROCESS (ENCODER) PG209
LUMA/CHROMA P.C.B
PG801
CN701
1 5V1
2 DEW
3 S. REEL
4 LOAD
5 CAPST. FWD
6 KEY 0
7 M. STATE 0
8 M. STATE 2
9 DEW
10 CAPST. FG
11 CYL. FG
12 CYL. SERVO
13 PG(TACH)PULSE
14 GND
15 5V4
16 GND (MOTOR)
17 GND (MOTOR)
18 B+ (CAPST.)
19 B+ (CYL.)
20 A9.6V
21 CYL. FB
22 S-VHS TAPE
23 M. STATE 1
24 KEY 1
25 CAPST. REV
26 UNLOAD
27 LOAD M. UP
28 T. REEL
29 FWD END
30 GND
PG702
CN02
1 PG(TACH)PULSE
2 HALL BIAS
3 PG(TACH)BIAS
4 V+
5 U+
6 W
7 U
8 V
9 W+
10 5V4
11 W−
12 U−
13 V−
14 CYL. FG
15 CYL. FG
CYL. MOTOR
PG704
CN04
1 CAPST. FG
2 T. REEL
3 B+ (SENSOR)
4 GND
5 5V4
6 GND (MOTOR)
7 B+ (CAPST.)
8 CAPST. FWD
CAPST. MOTOR
PG706
CN06
1 CST. SW
2 CONT.
CST. HOLDER
PG703
CN03
1 UNLOAD
2 —
3 LOAD
LOADING MOTOR
PG707
CN07
1 5V1
2 FWD END
SUPPLY END SENSOR
PG705
CN05
1 M. STATE 2
2 M. STATE 1
3 M. STATE 0
4 CONT.
MECHA STATE SW
PG708
CN08
1 S-VHS TAPE
2 GND
S-VHS TAPE SW
MOTOR DRIVE P.C.B
PG406
1 B+ (MIC)
2 AUDIO (Rch)
3 GND
4 AUDIO (Lch)
PG1M
MIC P.C.B
PG2M
1 FL DET
2 B+ (PT)
PROCESS (ENCODER) PG204
1
2
3
4
5
6
7
8

SENSOR SCHEMATIC

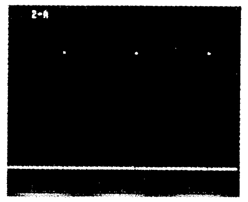

E
D
C
B
IC101
ICX039AK
SENSOR
IC102
CXD1250M
VERT. DRIVER
IC104
μPD65025-27
SENSOR DRIVER
IC105
HA118120
PRE PROCESS
IC106
MSM6856M
CCD 1H DELAY
IC107
TC74HC4066F
SW
IC501
TC4S66F
SW
Q101
2SC2462D(LD)
BUF
Q103
2SC2462D(LD)
BUF
Q116
2SC2462D(LD)
REG
Q112
2SA1738R(AKR)
BUF
Q113
2SC3757R(2YR)
AMP
Q114
2SC3757R (2YR)
BUF
Q115
2SA1738R(AKR)
AMP
Q117
2SA1738R (AKR)
BUF
Q118
2SC3757R (2YR)
AMP
Q119
2SC3757R(2YR)
BUF
Q120
2SA1738R (AKR)
AMP
Q121
2SA1122D(CD)
5.9V REG
Q122
FMW1(W1)
VOLTAGE CONT.
Q123
2SC2462D(LD)
VOLTAGE CONT.
Q108
2SC2462D(LD)
BUF
Q109
2SA1738R(AKR)
BUF
Q110
2SK1770(YD)
AMP
Q102
XN4501(5H)
Q104
IMT1(T1)
BUF
Q105
IMT1(T1)
BUF
Q106
2SC2462D(LD)
AMP
Q107
2SC2462D(LD)
AMP
Q124
2SC2462D(LD)
BUF
CP101
14.3MHz TRAP
SENSOR SUB VOLTAGE
TP101
TP102
X101
28.36MHz
DRIVE CLOCK Fo
DL101
100ns DELAY
CDS
GAIN CONT.
FB CLAMP
IRIS DET
AGC
AGC DET
BLANK/ CLIP
VERT. ENHANCER
HIGH LIGHT DET.
S/H
HORIZ APERTURE CORRECT
COLOR SEPA.
BASE NOISE CLIP
2-VOLT DRIVER
3-VOLT DRIVER
SUB DRIVER
CCD 1H DELAY
CLOCK
To ENCODER PG208
PG101
SHUT 2
SHUT 1
SHUT 0
DET TIMING
CHD
C.SYNC
H.OB
SHUT 3
PG102
GND
C-9V
C15V
Wr
Wb
Gr
Gb
V EDGE
Hi LIGHT
C5V
IRIS DET
AGC KILLER
LUMA
C9V
To PROCESS PG201
SENSOR P.C.B

NOTE: MARK "■" IS DISCRETE COMPONENT

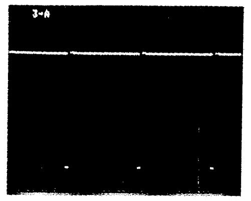
1-A IC102-3 5.2Vp-p 1V/20.0μ sec.cm COLOR CHART



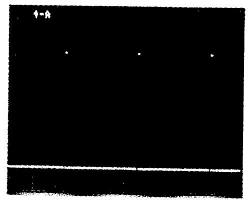
2-A IC102-4 5.2Vp-p 1V/20.0μ sec.cm COLOR CHART



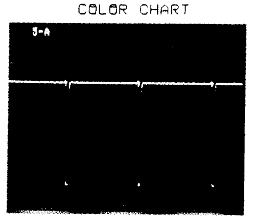
3-A IC102-6 5.2Vp-p 1V/20.0μ sec.cm COLOR CHART



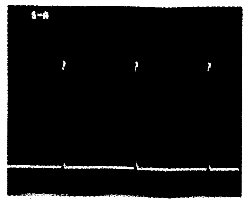
4-A IC102-8 5.2Vp-p 1V/20.0μ sec.cm COLOR CHART



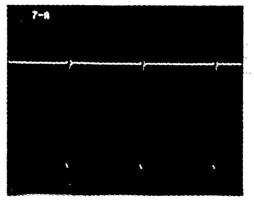
5-A IC102-13 9.3Vp-p 2V/20.0μ sec.cm COLOR CHART



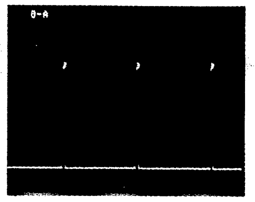
6-A IC102-14 9.6Vp-p 2V/20.0μ sec.cm COLOR CHART



7-A IC102-16 9.7Vp-p 2V/20.0μ sec.cm COLOR CHART



8-A IC102-17 9.4Vp-p 2V/20.0μ sec.cm COLOR CHART



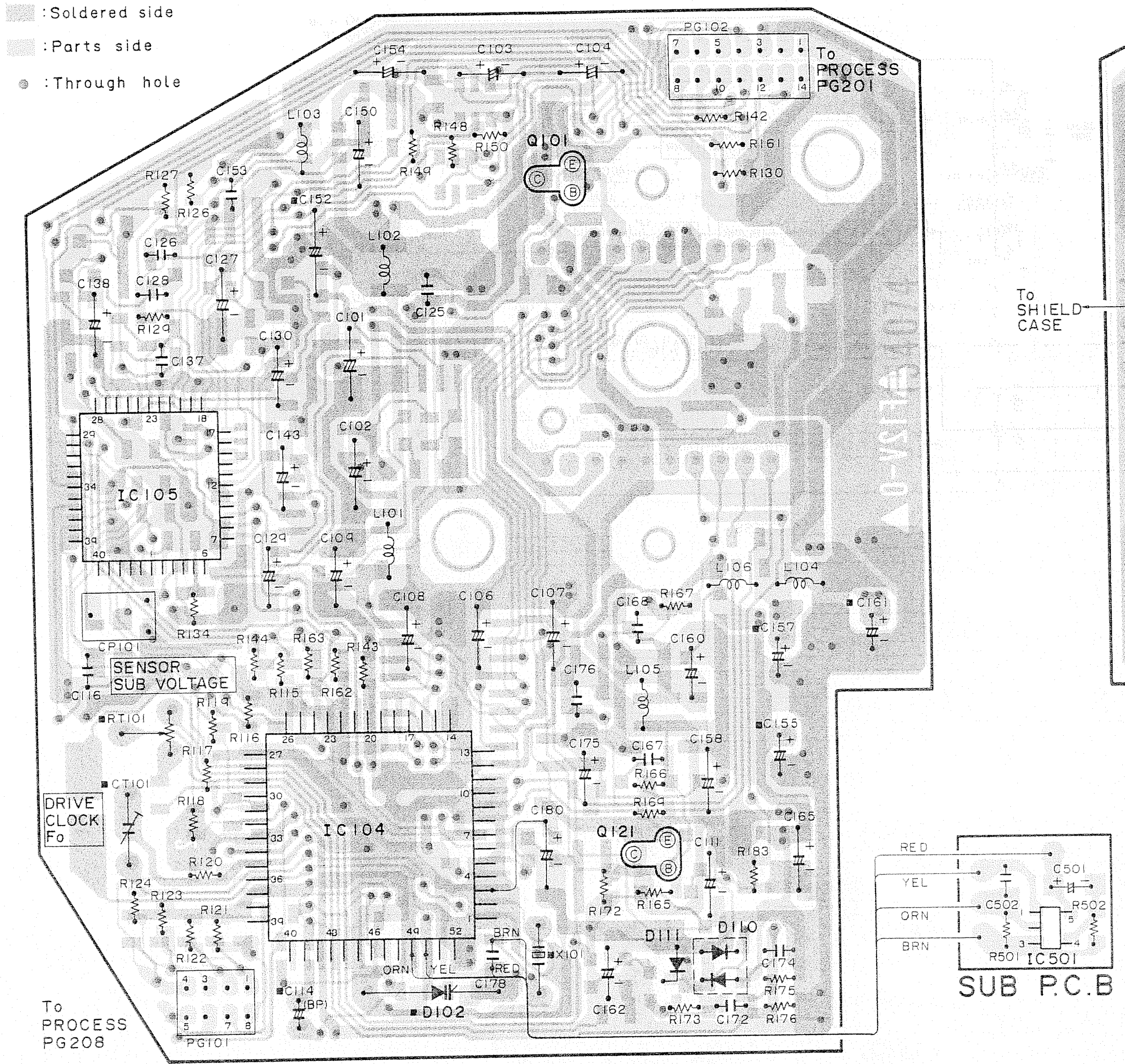
SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22	MOTOR DRIVE	5-43
AUDIO	5-31	MIC	5-48
CAPUSTAN MOTOR	5-45	PROCESS	5-11
CONTROL	5-19	PRE AMP	5-33
CHROMA	5-37	REGULATOR	5-27
DC-DC CONVERTER	5-46	SENSOR	5-7
ENCODER	5-15	SERVO	5-25
ELECTRONIC VIEWFINDER(EVF)	5-20	SYSTEM CONTROL	5-23
FM AUDIO	5-47	SWITCING REGULATOR	5-46
FOCUS SENSOR	5-21	TITLER	5-17
FUNCTION SW	5-27	TROUBLE DET	5-45
LUMINANCE	5-35		

A

1 2 3 4 5 6 7 8

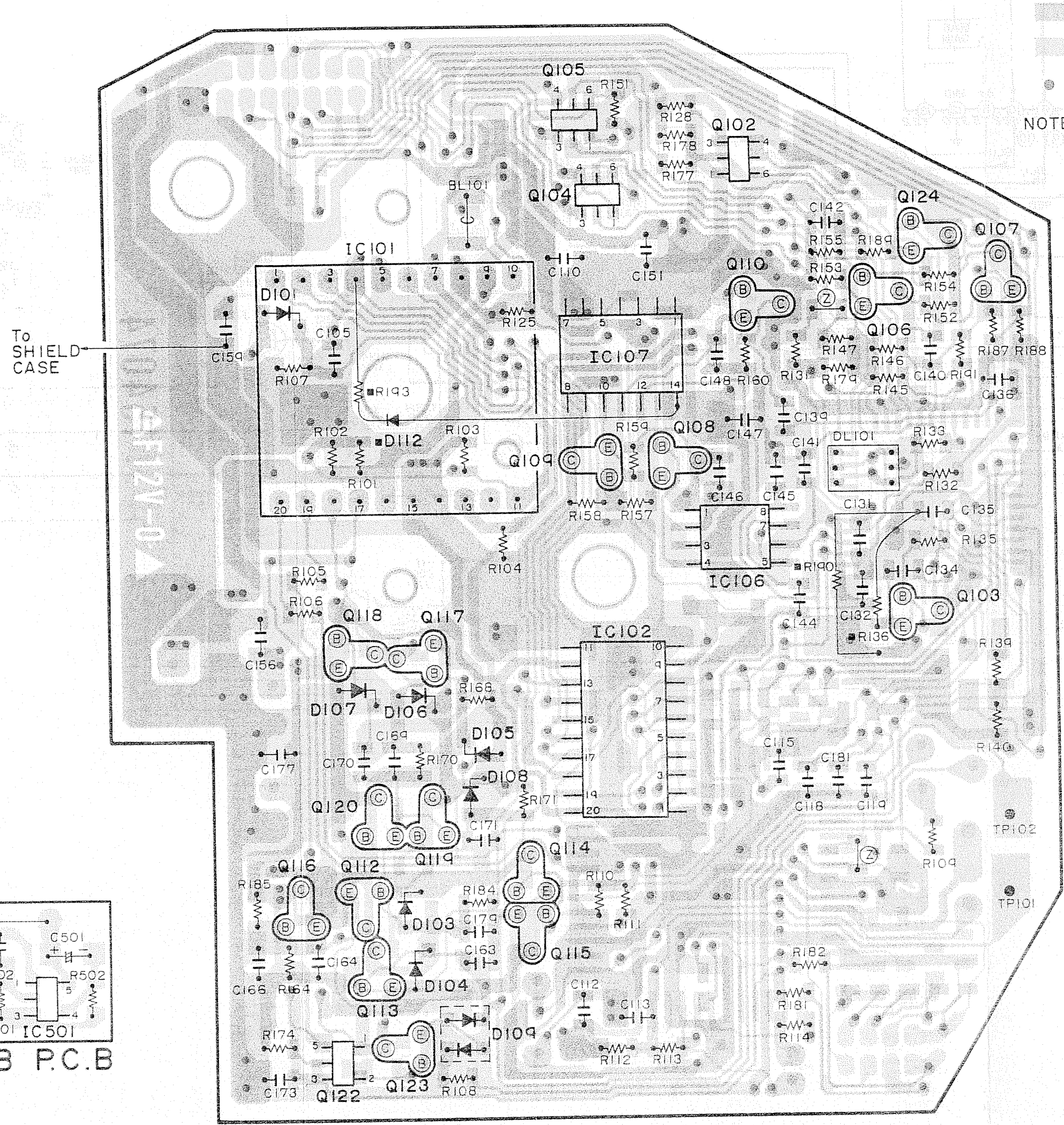
SENSOR CIRCUIT BOARD

▨ :Soldered side
▨ :Parts side
● :Through hole


C154
C103
C104
PG102
To PROCESS PG201
L103
C150
R148
R150
R149
Q101
R142
R161
R130
R127
R126
C153
C152
L102
C126
C127
C138
C128
R129
C125
C101
C130
C137
C143
C102
IC105
L101
C129
C109
C108
C106
C107
R167
L106
L104
C168
C161
C157
C160
CP101
R134
R144
R163
R143
SENSOR SUB VOLTAGE
C116
R115
R162
C176
L105
RT101
R119
R116
R117
C175
C167
R166
C158
C155
CT101
R118
DRIVE CLOCK Fo
IC104
C180
R169
C165
Q121
C111
R183
R120
R124
R123
R121
R172
R165
R122
D111
D110
C174
R175
BRN
X101
ORN
YEL
RED
C178
D102
C114
(BP)
C162
R173
C172
R176
PG101
To PROCESS PG208
RED
YEL
ORN
BRN
C501
C502
R502
R501
IC501
SUB P.C.B

NOTE: MARK "■" IS DISCRETE COMPONENT.

SENSOR P.C.B
(COMPONENT SIDE)

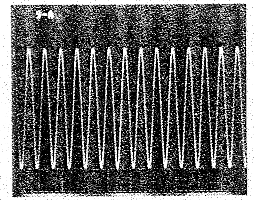

To SHIELD CASE
Q105
R151
R128
R178
R177
Q102
BL101
Q104
C142
Q124
Q107
IC101
C110
C151
R155
R189
D101
Q110
R153
R154
R152
C105
R125
IC107
Q106
R147
R146
R187
R188
C159
R107
R193
C148
R160
R131
R179
R145
C140
R191
C136
R102
D112
R103
R159
Q108
C147
C139
Q109
C141
DL101
R133
R101
R158
R157
C146
C145
R132
C131
C135
R135
R104
IC106
R190
C134
R105
R106
Q118
Q117
C144
C132
R136
Q103
IC102
R139
C156
R168
D107
D106
D105
C169
R170
C177
C170
D108
R171
C115
C181
C118
C119
R140
Q120
C171
Q119
Q114
TP102
Q116
Q112
R185
R110
R184
R109
TP101
D103
C179
R111
C164
C163
Q115
C166
R164
D104
Q113
R182
C112
C113
R181
R174
R114
D109
Q122
Q123
R108
R112
R113
C173

SENSOR P.C.B
(SOLDER SIDE)

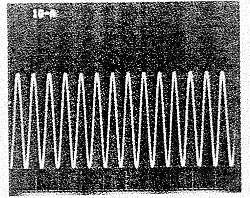
▨ :Soldered side
▨ :Parts side
● :Through hole

NOTE: MARK "■" IS DISCRETE COMPONENT.
MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

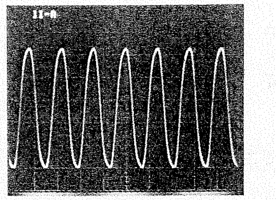
9-A IC104-1 2.6Vp-p
0.5V/50.0nsec.cm
COLOR CHART



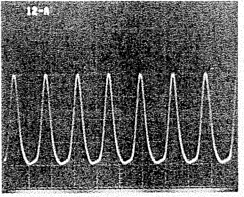
10-A IC104-2 2.1Vp-p
0.5V/50.0nsec.cm
COLOR CHART



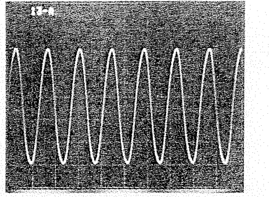
11-A IC104-4 5.2Vp-p
1V/50.0nsec.cm
COLOR CHART



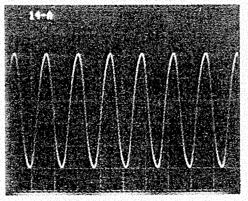
12-A IC104-6 4.0Vp-p
1V/50.0nsec.cm
COLOR CHART



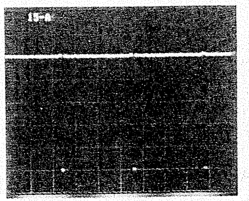
13-A IC104-8 5.1Vp-p
1V/50.0nsec.cm
COLOR CHART



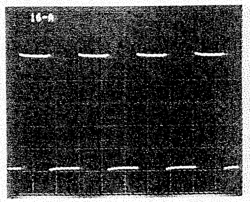
14-A IC104-9 5.1Vp-p
1V/50.0nsec.cm
COLOR CHART



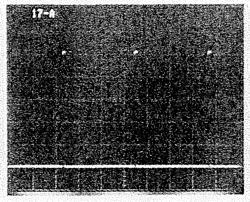
15-A IC104-18 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



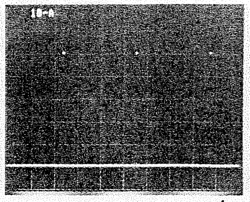
16-A IC104-26 5.3Vp-p
1V/50.0μ sec.cm
COLOR CHART



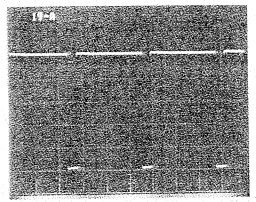
17-A IC104-30 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



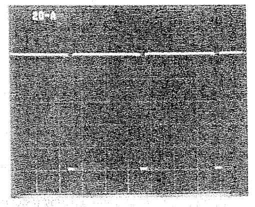
18-A IC104-31 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



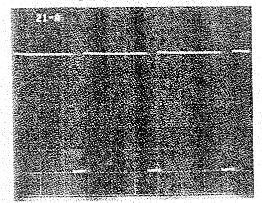
19-A IC104-32 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



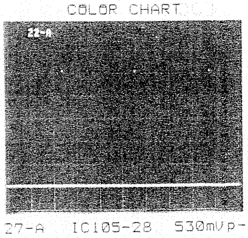
20-A IC104-43 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



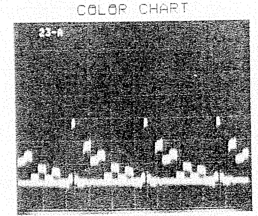
21-A IC104-44 5.3Vp-p
1V/20.0μ sec.cm
COLOR CHART



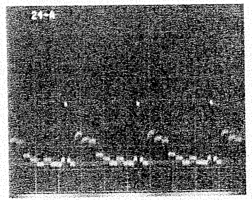
22-A IC104-49 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



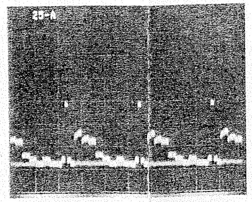
23-A IC105-18 650mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



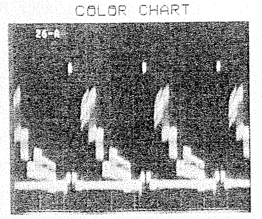
24-A IC105-20 600mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



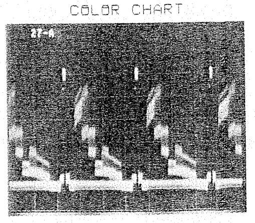
25-A IC105-21 600mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



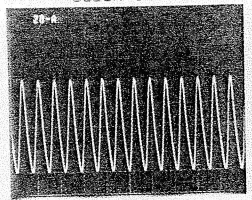
26-A IC105-25 560mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



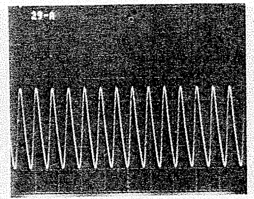
27-A IC105-28 530mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



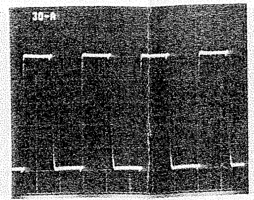
28-A IC105-29 2.1Vp-p
0.5V/100nsec.cm
COLOR CHART



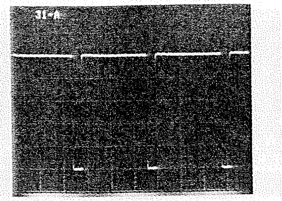
29-A IC105-30 1.8Vp-p
0.5V/100nsec.cm
COLOR CHART



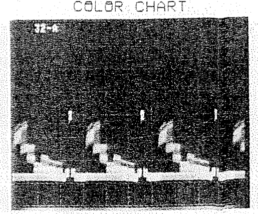
30-A IC105-31 5.1Vp-p
1V/50.0μ sec.cm
COLOR CHART



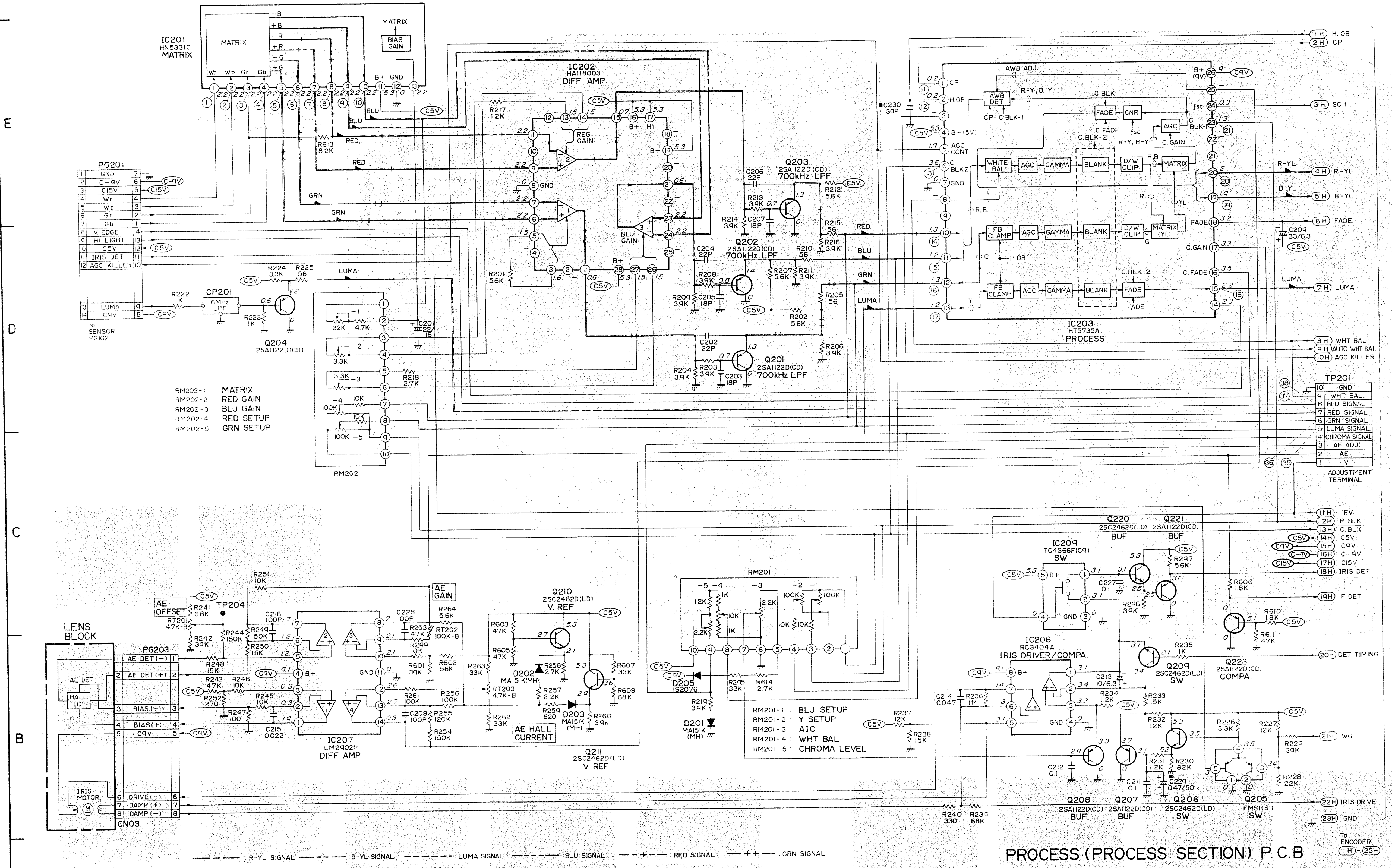
31-A IC105-35 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



32-A IC106-4 1.6Vp-p
0.5V/20.0μ sec.cm
COLOR CHART

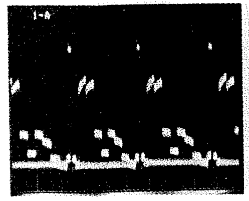


PROCESS (PROCESS SECTION) SCHEMATIC

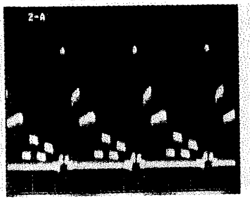

IC201 HN5331C MATRIX
MATRIX
BIAS GAIN
-B +B -R +R -G +G
Wr Wb Gr Gb
B+ GND
IC202 HA118003 DIFF AMP
REG GAIN
BLU GAIN
R217 1.2K
R613 8.2K
RED
GRN
BLU
PG201
GND
C-9V
C15V
Wr
Wb
Gr
Gb
V EDGE
Hi LIGHT
C5V
IRIS DET
AGC KILLER
LUMA
C9V
To SENSOR PG102
R222 1K
CP201 6MHz LPF
R223 1K
Q204 2SA1122D(CD)
R224 3.3K
R225 56
R201 56K
C201 22
RM202
RM202-1 MATRIX
RM202-2 RED GAIN
RM202-3 BLU GAIN
RM202-4 RED SETUP
RM202-5 GRN SETUP
R218 2.7K
C206 22P
Q203 2SA1122D(CD) 700kHz LPF
R212 5.6K
R213 3.9K
R214 3.9K
C207 18P
R215 56
R216 3.9K
Q202 2SA1122D(CD) 700kHz LPF
C204 22P
R208 3.9K
R209 3.9K
C205 18P
R207 5.6K
R211 3.9K
R210 56
R202 5.6K
R205 56
R206 3.9K
C202 22P
R203 3.9K
R204 3.9K
C203 18P
Q201 2SA1122D(CD) 700kHz LPF
C230 39P
AWB ADJ.
AWB DET
R-Y, B-Y
C.BLK
FADE
CNR
AGC
C.FADE
C.BLK-2
C.GAIN
WHITE BAL.
GAMMA
BLANK
D/W CLIP
MATRIX
MATRIX (YL)
FB CLAMP
H.OB
CP C.BLK-1
AGC CONT
B+(5V)
B+ (9V)
fsc
R-YL
B-YL
FADE
C209 33/6.3
C.GAIN
C FADE
LUMA
IC203 HT5735A PROCESS
1H H.OB
2H CP
3H SC I
4H R-YL
5H B-YL
6H FADE
7H LUMA
8H WHT BAL
9H AUTO WHT BAL
10H AGC KILLER
TP201
GND
WHT. BAL.
BLU SIGNAL
RED SIGNAL
GRN SIGNAL
LUMA SIGNAL
CHROMA SIGNAL
AE ADJ.
AE
FV
ADJUSTMENT TERMINAL
11H FV
12H P. BLK
13H C. BLK
14H C5V
15H C9V
16H C-9V
17H C15V
18H IRIS DET
19H F DET
20H DET TIMING
21H WG
22H IRIS DRIVE
23H GND
To ENCODER 1H - 23H
Q220 2SC2462D(LD) BUF
Q221 2SA1122D(CD) BUF
IC209 TC4S66F(C9) SW
C227 0.1
R296 3.9K
R247 5.6K
R606 1.8K
R610 1.8K
R611 47K
Q223 2SA1122D(CD) COMPA.
R235 1K
Q209 2SC2462D(LD) SW
IC206 RC3404A IRIS DRIVER/COMPA.
C213 10/6.3
R234 1.2K
R233 1.5K
R232 1.2K
R226 3.3K
R227 12K
R229 39K
R228 22K
C214 0.047
R236 1M
R237 12K
R238 15K
C212 0.1
C211 0.1
R231 1.2K
R230 82K
C224 0.47/50
R240 330
R239 68K
Q208 2SA1122D(CD) BUF
Q207 2SA1122D(CD) BUF
Q206 2SC2462D(LD) SW
Q205 FMS1(S1) SW
RM201
RM201-1 BLU SETUP
RM201-2 Y SETUP
RM201-3 AIC
RM201-4 WHT BAL
RM201-5 CHROMA LEVEL
D205 1S2076
R295 33K
R614 2.7K
R219 3.9K
D201 MA151K (MH)
LENS BLOCK
AE DET
HALL IC
IRIS MOTOR
PG203
AE DET(-)
AE DET(+)
BIAS(-)
BIAS(+)
C9V
DRIVE(-)
DAMP(+)
DAMP(-)
CN03
AE OFFSET
RT201 47K-B
R241 6.8K
TP204
R242 3.9K
R248 15K
R244 150K
R249 150K
R250 15K
C216 100P
R251 10K
R243 47K
R246 10K
R252 270
R245 10K
R247 100
C215 0.022
IC207 LM2902M DIFF AMP
AE GAIN
C228 100P
R253 47K
RT202 100K-B
R299 10K
R264 5.6K
R601 39K
R602 56K
R261 100K
R256 100K
C208 100P
R255 120K
R254 150K
R263 33K
RT203 4.7K-B
R262 33K
R603 47K
R605 47K
D202 MA151K(MH)
R258 2.7K
R257 2.2K
R259 820
D203 MA151K (MH)
AE HALL CURRENT
Q210 2SC2462D(LD) V. REF
Q211 2SC2462D(LD) V. REF
R607 33K
R608 68K
R260 3.9K
R-YL SIGNAL
B-YL SIGNAL
LUMA SIGNAL
BLU SIGNAL
RED SIGNAL
GRN SIGNAL

PROCESS (PROCESS SECTION) P.C.B

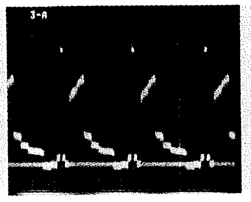
1-A IC201-1 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



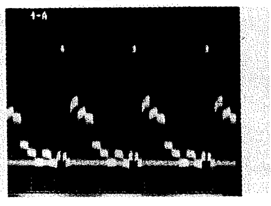
2-A IC201-2 550mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



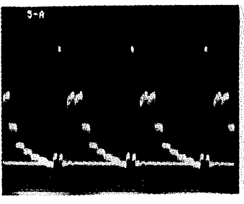
3-A IC201-3 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



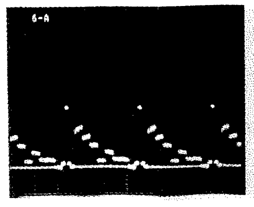
4-A IC201-4 550mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



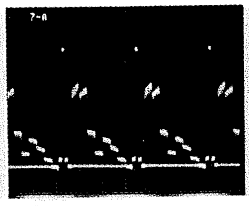
5-A IC201-5 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



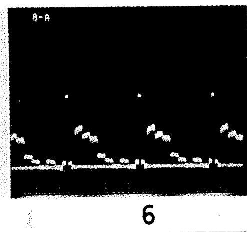
6-A IC201-6 150mVp-p
50mV/20.0μ sec.cm
COLOR CHART



7-A IC201-7 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART

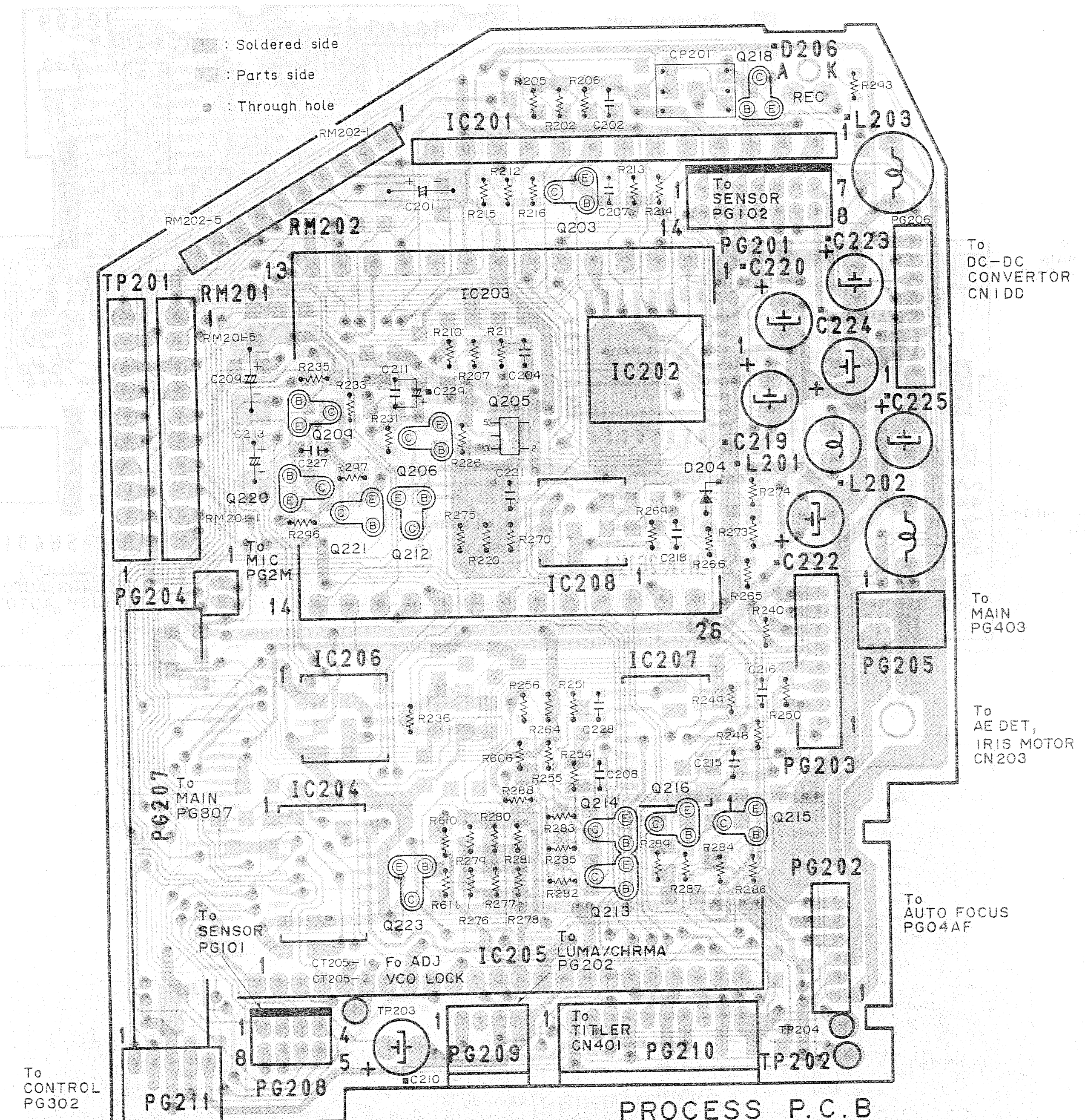


8-A IC201-8 340mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22	MOTOR DRIVE	5-43
AUDIO	5-31	MIC	5-48
CAPUSTAN MOTOR	5-45	PROCESS	5-11
CONTROL	5-19	PRE AMP	5-33
CHROMA	5-37	REGULATOR	5-27
DC-DC CONVERTER	5-46	SENSOR	5-7
ENCODER	5-15	SERVO	5-25
ELECTRONIC VIEWFINDER(EVF)	5-20	SYSTEM CONTROL	5-23
FM AUDIO	5-47	SWITCING REGULATOR	5-46
FOCUS SENSOR	5-21	TITLER	5-17
FUNCTION SW	5-27	TROUBLE DET	5-45
LUMINANCE	5-35		

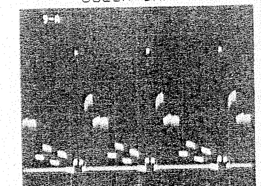
PROCESS CIRCUIT BOARD


: Soldered side
: Parts side
: Through hole
RM202-1
RM202-5
RM202
RM201
RM201-5
RM201-1
TP201
IC201
IC202
IC203
IC204
IC205
IC206
IC207
IC208
CP201
Q201
Q203
Q205
Q206
Q209
Q212
Q213
Q214
Q215
Q216
Q218
Q220
Q221
Q223
D204
D206
A
K
REC
L201
L202
L203
C219
C220
C222
C223
C224
C225
To SENSOR PG102
PG201
PG206
To DC-DC CONVERTOR CN1DD
To MIC PG2M
PG204
To MAIN PG403
PG205
IC206
To AE DET, IRIS MOTOR CN203
PG203
To MAIN PG807
PG207
PG202
To AUTO FOCUS PG04AF
To SENSOR PG101
CT205-1
CT205-2
Fo ADJ
VCO LOCK
To LUMA/CHRMA PG202
TP203
TP204
TP202
To TITLER CN401
PG209
PG210
PG208
PG211
To CONTROL PG302
C210

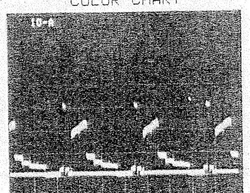
NOTE:MARK "■" IS DISCRETE COMPONENT.

PROCESS P.C.B
(COMPONENT SIDE)

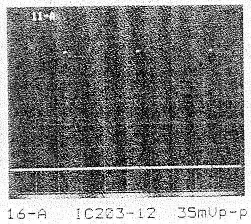
9-A IC201-9 540mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



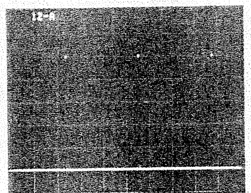
10-A IC201-10 320mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



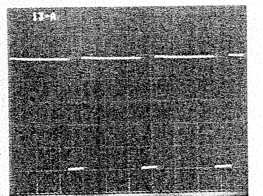
11-A IC203-1 520mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



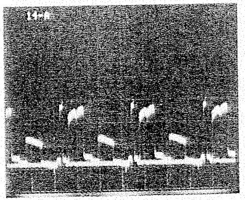
12-A IC203-2 510mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



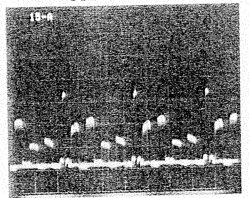
13-A IC203-6 5.0Vp-p
1V/20.0μ sec.cm
COLOR CHART



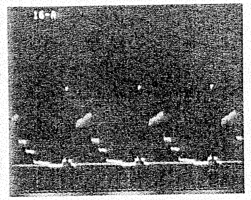
14-A IC203-10 280mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



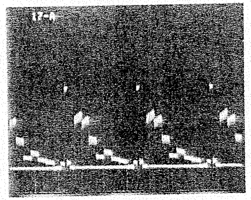
15-A IC203-11 340mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



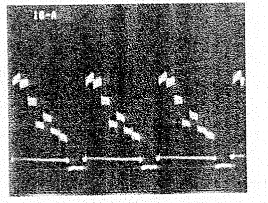
16-A IC203-12 35mVp-p
10mV/20.0μ sec.cm
COLOR CHART

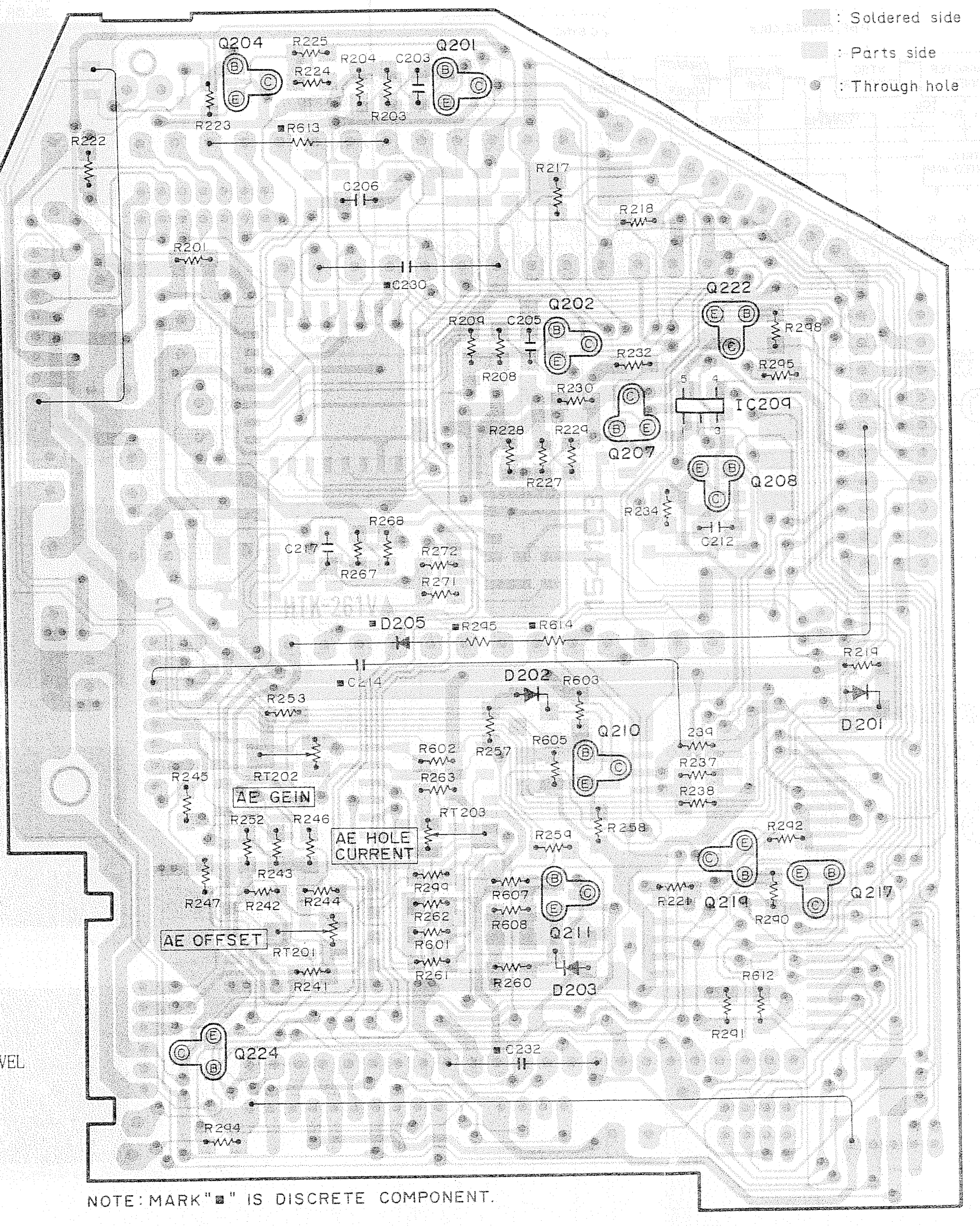


17-A IC203-13 37mVp-p
10mV/20.0μ sec.cm
COLOR CHART



18-A IC203-15 860mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



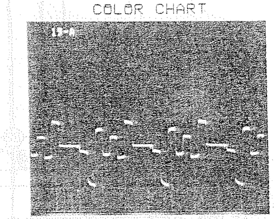


RM201-1: BLU SETUP
RM201-2: Y SETUP
RM201-3: AIC
RM201-4: WHT BAL
RM201-5: CHROMA LEVEL
RM202-1: MATRIX
RM202-2: RED GAIN
RM202-3: BLU GAIN
RM202-4: RED SETUP
RM202-5: GRN SETUP

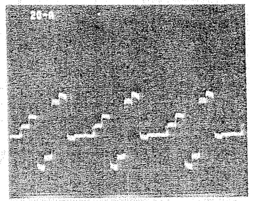
NOTE:MARK "■" IS DISCRETE COMPONENT.

PROCESS P.C.B
(SOLDER SIDE)

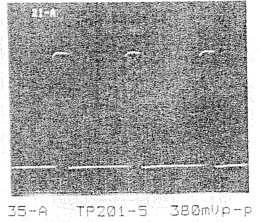
19-A IC203-19 1.5Vp-p
0.5V/20.0μ sec.cm
COLOR CHART



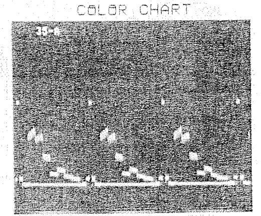
20-A IC203-20 680mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



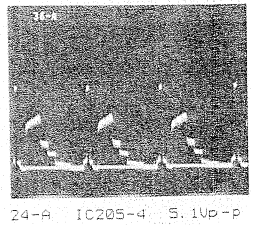
21-A IC203-23 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



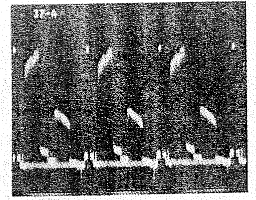
35-A TP201-5 380mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



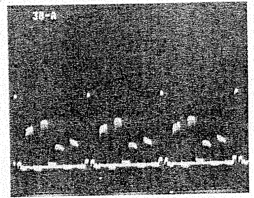
36-A TP201-6 380mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



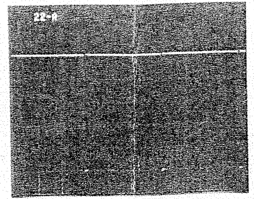
37-A TP201-7 270mVp-p
50mV/20.0μ sec.cm
COLOR CHART



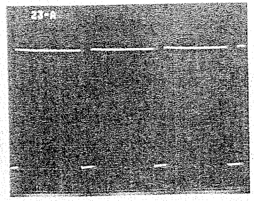
38-A TP201-8 340mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



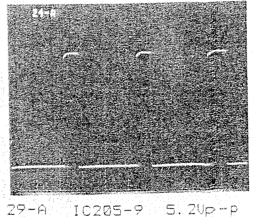
22-A IC205-1 5.2Vp-p
1V/5.0msec.cm
COLOR CHART



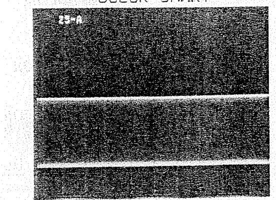
23-A IC205-3 5.3Vp-p
1V/20.0μ sec.cm
COLOR CHART



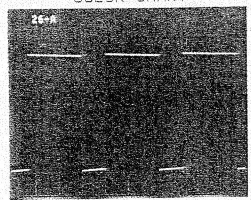
24-A IC205-4 5.1Vp-p
1V/20.0μ sec.cm
COLOR CHART



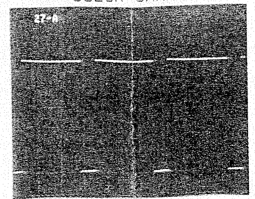
25-A IC205-5 720mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



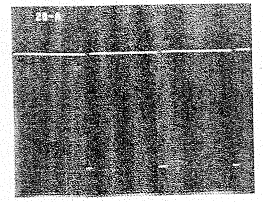
26-A IC205-6 5.3Vp-p
1V/5.0msec.cm
COLOR CHART



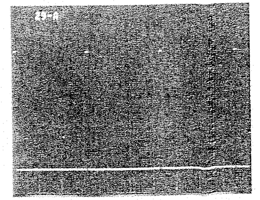
27-A IC205-7 5.0Vp-p
1V/20.0μ sec.cm
COLOR CHART



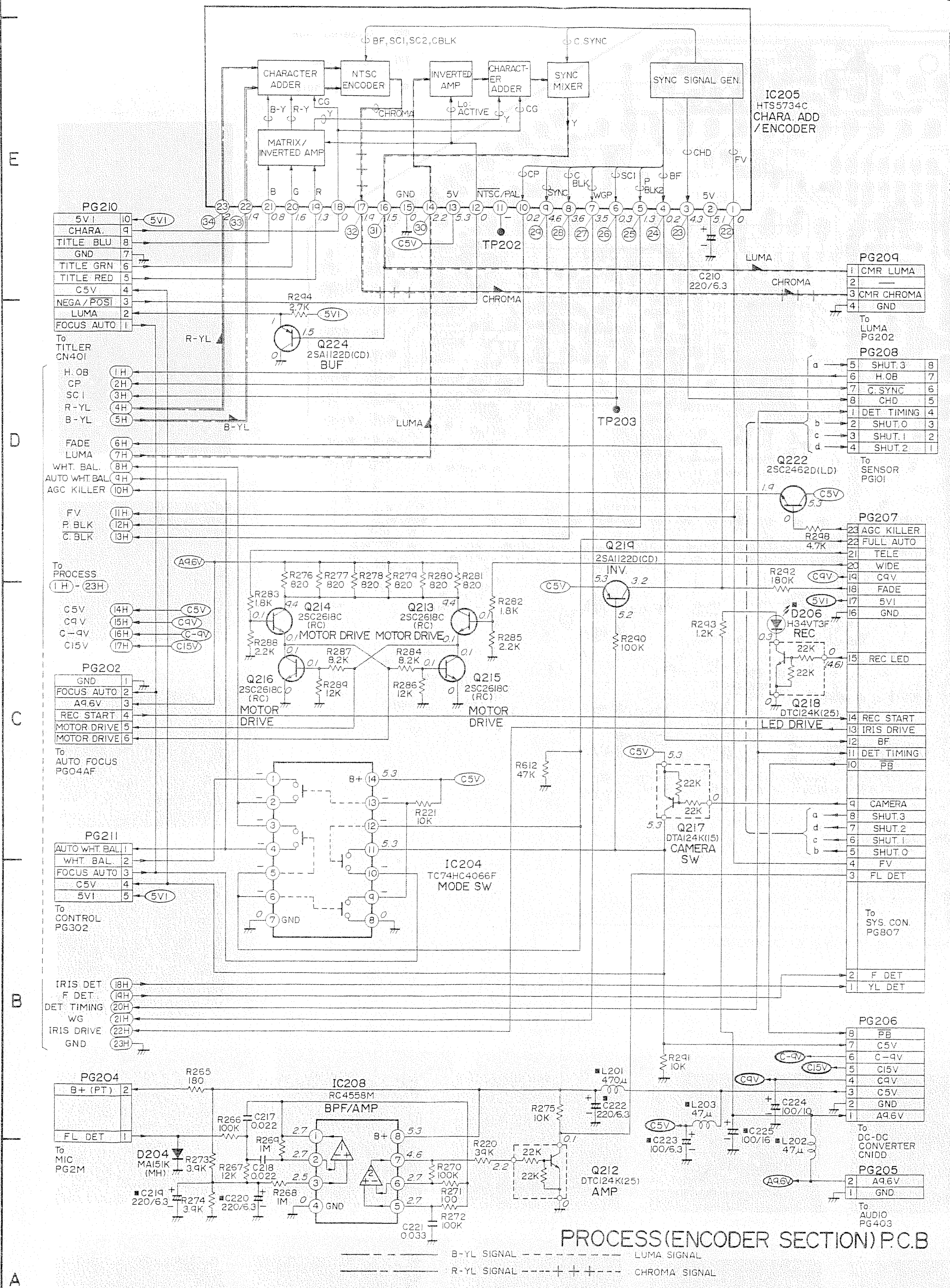
28-A IC205-8 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



29-A IC205-9 5.2Vp-p
1V/20.0μ sec.cm
COLOR CHART



PROCESS(ENCODER SECTION) SCHEMATIC

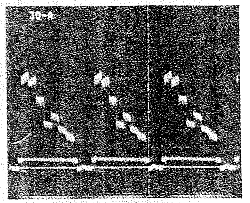

CHARACTER ADDER
NTSC ENCODER
INVERTED AMP
CHARACTER ADDER
SYNC MIXER
SYNC SIGNAL GEN.
MATRIX/ INVERTED AMP
BF,SCI,SC2,CBLK
C.SYNC
Lo: ACTIVE
CHROMA
IC205 HTS5734C CHARA. ADD /ENCODER
PG210
5V1
CHARA.
TITLE BLU
GND
TITLE GRN
TITLE RED
C5V
NEGA/POSI
LUMA
FOCUS AUTO
To TITLER CN401
TP202
TP203
PG209
CMR LUMA
CMR CHROMA
GND
To LUMA PG202
PG208
SHUT.3
H.OB
C.SYNC
CHD
DET TIMING
SHUT.0
SHUT.1
SHUT.2
To SENSOR PG101
Q224 2SA1122D(CD) BUF
R294 2.7K
H.OB
CP
SC1
R-YL
B-YL
FADE
LUMA
WHT. BAL.
AUTO WHT BAL
AGC KILLER
FV
P. BLK
C. BLK
To PROCESS (1H)-(23H)
C5V
C9V
C-9V
C15V
Q222 2SC2462D(LD)
PG207
AGC KILLER
FULL AUTO
TELE
WIDE
C9V
FADE
5V1
GND
REC LED
REC START
IRIS DRIVE
BF
DET TIMING
PB
CAMERA
SHUT.3
SHUT.2
SHUT.1
SHUT.0
FV
FL DET
Q219 2SA1122D(CD) INV
Q214 2SC2618C (RC) MOTOR DRIVE
Q213 2SC2618C (RC) MOTOR DRIVE
Q216 2SC2618C (RC) MOTOR DRIVE
Q215 2SC2618C (RC) MOTOR DRIVE
D206 H34VT3F REC
Q218 DTC124K(25) LED DRIVE
PG202
GND
FOCUS AUTO
A9.6V
REC START
MOTOR DRIVE
MOTOR DRIVE
To AUTO FOCUS PG04AF
IC204 TC74HC4066F MODE SW
Q217 DTA124K(15) CAMERA SW
PG211
AUTO WHT BAL
WHT BAL.
FOCUS AUTO
C5V
5V1
To CONTROL PG302
To SYS. CON. PG807
F DET
YL DET
IRIS DET
F DET.
DET TIMING
WG
IRIS DRIVE
GND
PG206
PB
C5V
C-9V
C15V
C9V
C5V
GND
A9.6V
To DC-DC CONVERTER CN1DD
PG205
A9.6V
GND
To AUDIO PG403
PG204
B+(PT)
FL DET
To MIC PG2M
D204 MA151K (MH)
IC208 RC4558M BPF/AMP
Q212 DTC124K(25) AMP
L201 470μ
L203 47μ
L202 47μ

PROCESS(ENCODER SECTION)P.C.B

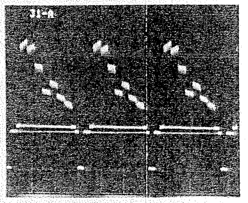
B-YL SIGNAL ———— LUMA SIGNAL

R-YL SIGNAL -+-+- CHROMA SIGNAL

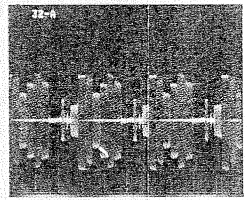
30-A IC205-14 880mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



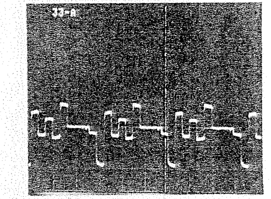
31-A IC205-16 1.1Vp-p
0.2V/20.0μ sec.cm
COLOR CHART



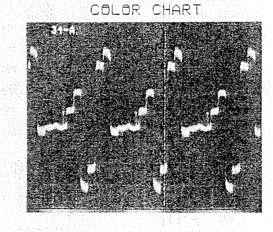
32-A IC205-17 850mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



33-A IC205-22 1.4Vp-p
0.5V/20.0μ sec.cm
COLOR CHART

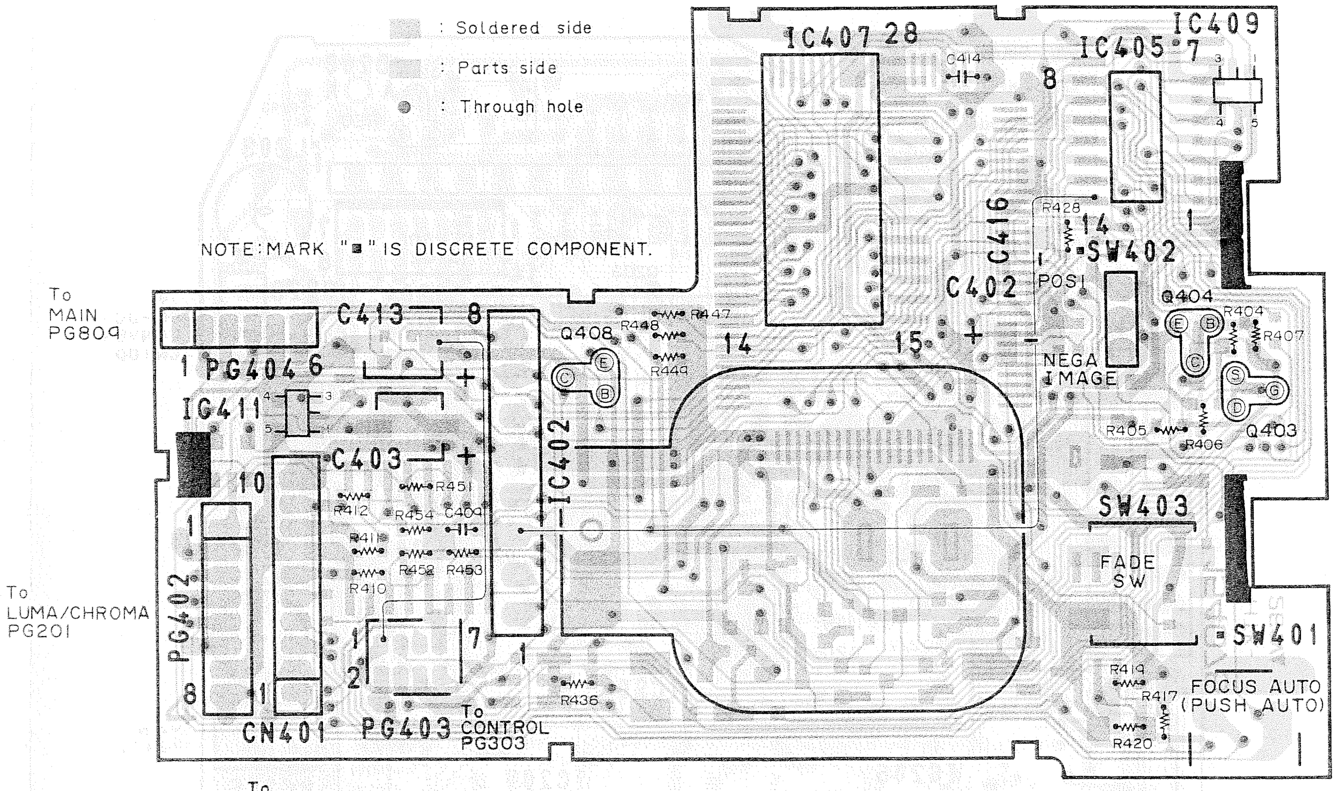


34-A IC205-23 650mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

TITLER CIRCUIT BOARD


To MAIN PG809
To LUMA/CHROMA PG201
To PROCESS PG210
To CONTROL PG303
IC407
IC405
IC409
C414
C416
C402
C413
C403
PG404
IC411
IC402
PG402
CN401
PG403
Q408
Q404
Q403
R404
R407
R405
R406
R428
SW402
POSI
NEGA IMAGE
SW403
FADE SW
SW401
FOCUS AUTO (PUSH AUTO)
R419
R417
R420
R436
R448
R447
R449
R451
R412
R454
C404
R411
R452
R453
R410

▨ : Soldered side

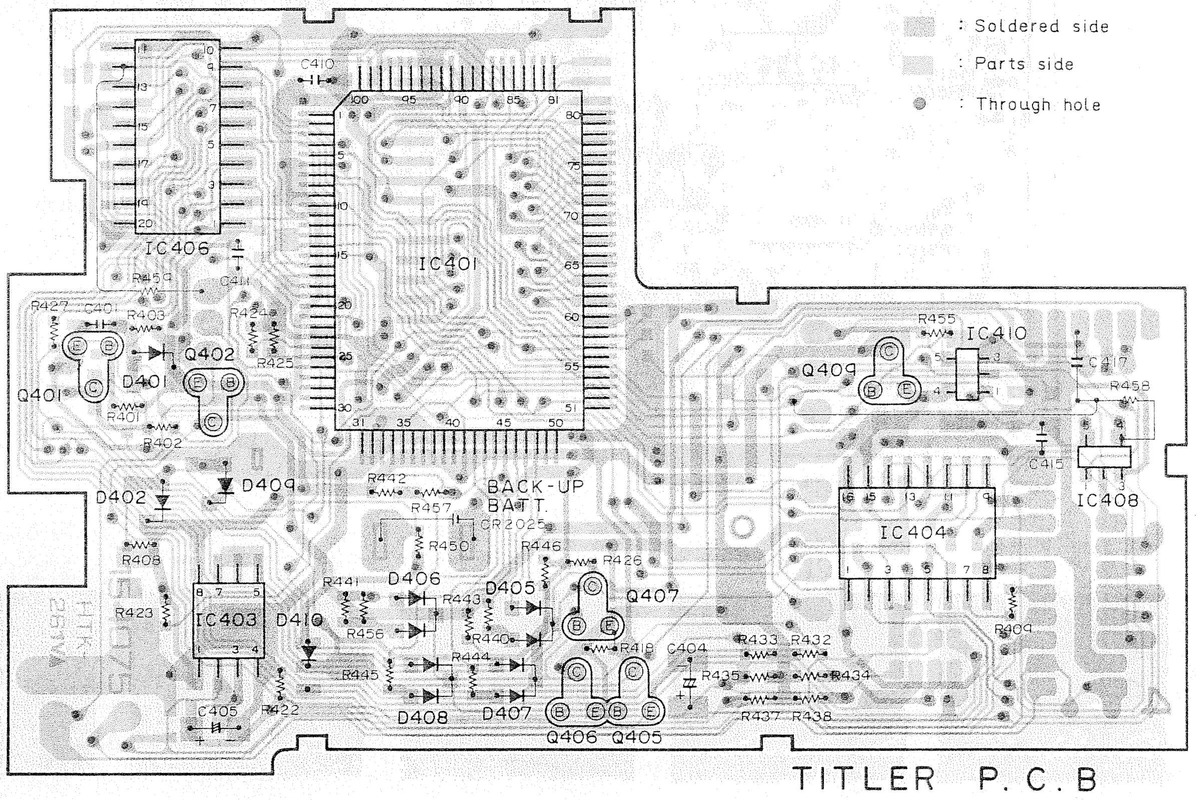
▨ : Parts side

● : Through hole

NOTE:MARK "■" IS DISCRETE COMPONENT.

TITLER P.C B

(COMPONENT SIDE)


IC406
IC401
IC410
IC408
IC404
IC403
C410
C411
C401
C415
C417
C404
C405
Q401
Q402
Q409
Q407
Q406
Q405
D401
D402
D404
D405
D406
D407
D408
D410
R401
R402
R403
R421
R423
R425
R427
R429
R432
R433
R434
R435
R437
R438
R440
R441
R442
R443
R444
R445
R446
R450
R455
R456
R457
R458
R426
R418
R422
BACK-UP BATT. CR2025

▨ : Soldered side

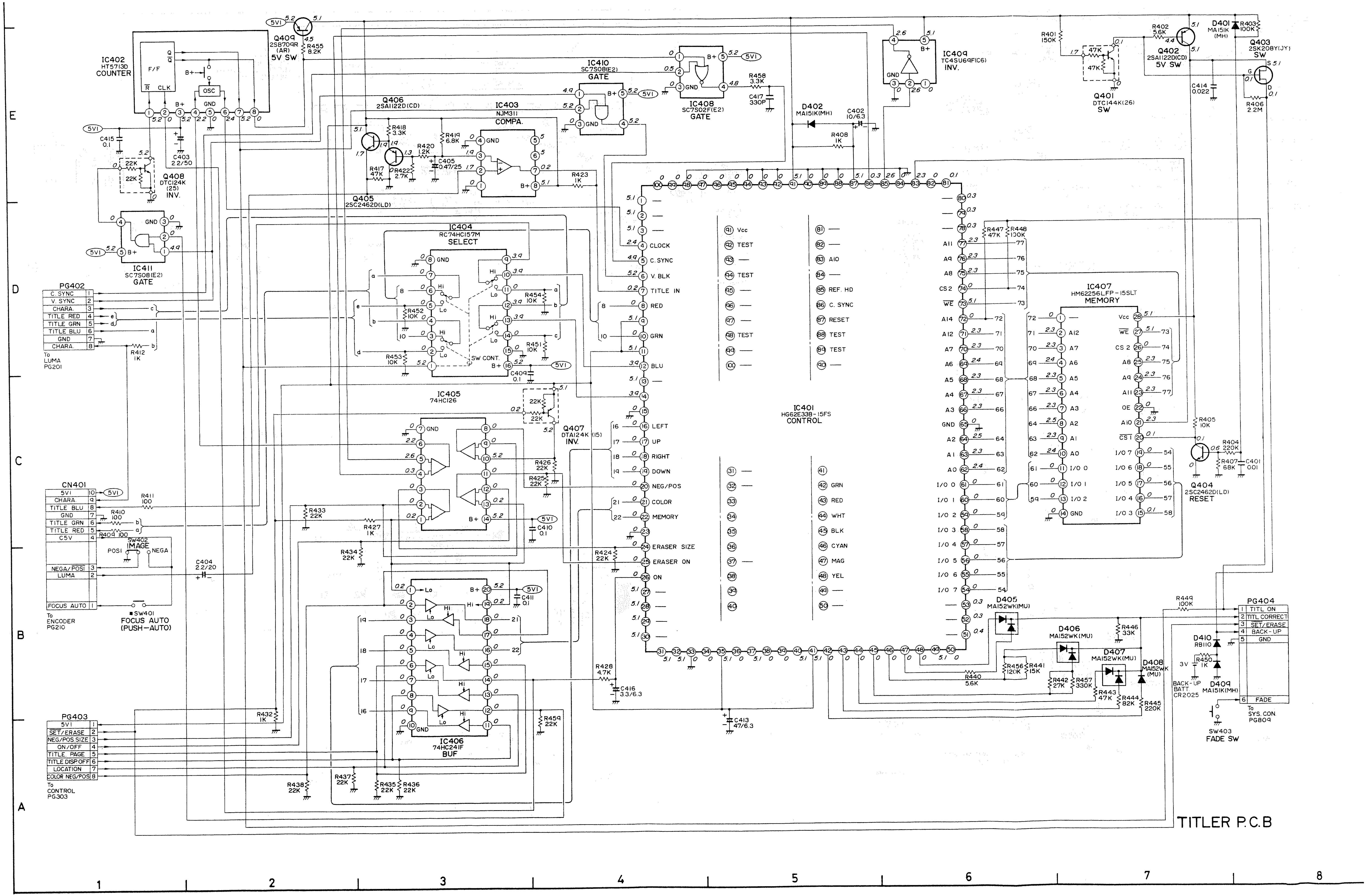
▨ : Parts side

● : Through hole

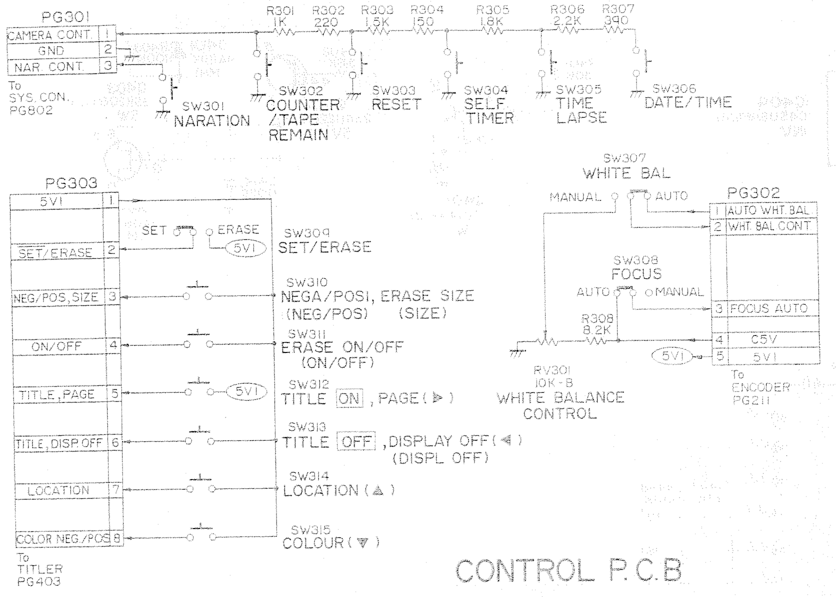
TITLER P.C.B

(SOLDER SIDE)

TITLER SCHEMATIC


IC402
HT5713D
COUNTER
F/F
OSC
Q409
2SB709R
(AR)
5V SW
R455
8.2K
IC410
SC7S08(E2)
GATE
IC408
SC7S02F(E2)
GATE
R458
3.3K
C417
330P
IC409
TC4SU69F(C6)
INV.
D402
MA151K(MH)
C402
10/6.3
R408
1K
Q406
2SA1122D(CD)
IC403
NJM311
COMPA.
R418
3.3K
R419
6.8K
R420
1.2K
C405
0.047/25
R417
47K
R422
2.7K
R423
1K
Q405
2SC2462D(LD)
C415
0.1
C403
22/50
Q408
DTC124K
(25)
INV.
IC411
SC7S08(E2)
GATE
IC404
RC74HC157M
SELECT
R452
10K
R453
10K
R454
10K
R451
10K
SW CONT.
C409
0.1
IC405
74HC126
Q407
DTA124K (15)
INV.
R426
22K
R425
22K
C410
0.1
R433
22K
R427
1K
R434
22K
R424
22K
IC406
74HC241F
BUF
C411
0.1
R428
4.7K
C416
3.3/6.3
R432
1K
R459
22K
R438
22K
R437
22K
R435
22K
R436
22K
PG402
C. SYNC
V. SYNC
CHARA.
TITLE RED
TITLE GRN
TITLE BLU
GND
CHARA.
To
LUMA
PG201
R412
1K
CN401
5V1
CHARA.
TITLE BLU
GND
TITLE GRN
TITLE RED
C5V
NEGA/POSI
LUMA
FOCUS AUTO
To
ENCODER
PG210
R411
100
R410
100
R409
100
SW402
IMAGE
POSI
NEGA
C404
22/20
SW401
FOCUS AUTO
(PUSH-AUTO)
PG403
5V1
SET/ERASE
NEG/POS SIZE
ON/OFF
TITLE PAGE
TITLE DISP OFF
LOCATION
COLOR NEG/POS
To
CONTROL
PG303
IC401
HG62E33B-15FS
CONTROL
CLOCK
C. SYNC
V. BLK
TITLE IN
RED
GRN
BLU
LEFT
UP
RIGHT
DOWN
NEG/POS
COLOR
MEMORY
ERASER SIZE
ERASER ON
ON
Vcc
TEST
REF. HD
C. SYNC
RESET
A10
GRN
RED
WHT
BLK
CYAN
MAG
YEL
A11
A9
A8
CS2
WE
A14
A12
A7
A6
A5
A4
A3
GND
A2
A1
A0
I/O 0
I/O 1
I/O 2
I/O 3
I/O 4
I/O 5
I/O 6
I/O 7
C413
47/6.3
R447
47K
R448
130K
IC407
HM62256LFP-15SLT
MEMORY
OE
CS1
R401
150K
R402
5.6K
Q402
2SA1122D(CD)
5V SW
Q401
DTC144K(26)
SW
D401
MA151K
(MH)
R403
100K
Q403
2SK208Y(JY)
SW
C414
0.022
R406
2.2M
R405
10K
R404
220K
R407
68K
C401
0.01
Q404
2SC2462D(LD)
RESET
D405
MA152WK(MU)
D406
MA152WK(MU)
D407
MA152WK(MU)
D408
MA152WK
(MU)
R446
33K
R456
12K
R441
15K
R440
5.6K
R442
27K
R457
330K
R443
47K
R444
82K
R445
220K
R449
100K
PG404
TITL ON
TITL CORRECT
SET/ERASE
BACK-UP
GND
FADE
To
SYS. CON
PG809
D410
RB110
R450
1K
3V
BACK-UP
BATT.
CR2025
D409
MA151K(MH)
SW403
FADE SW
TITLER P.C.B
A
B
C
D
E
1
2
3
4
5
6
7
8

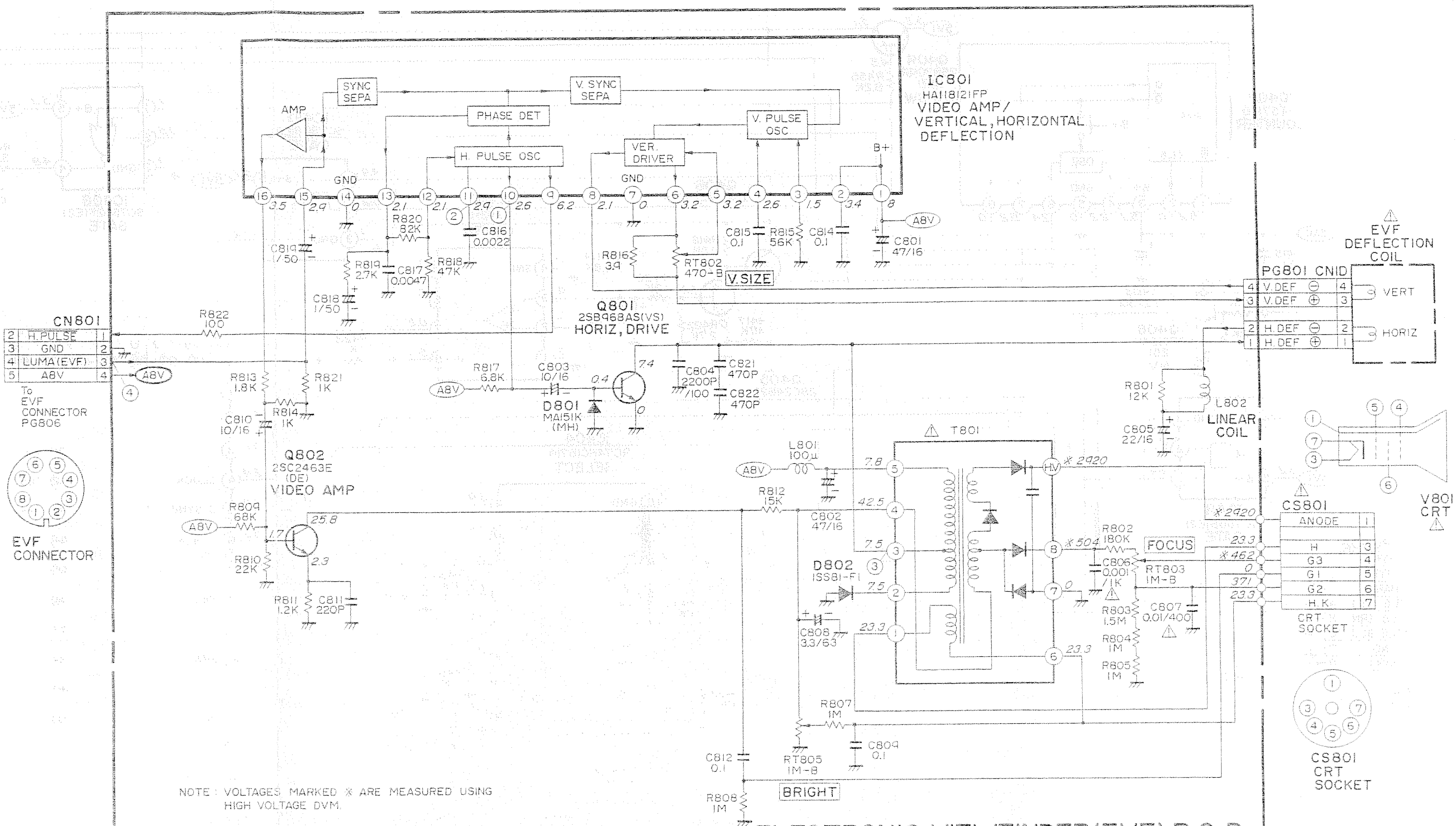
ONTROL SCHEMATIC


PG301
CAMERA CONT
GND
NAR CONT
To SYS. CON. PG802
R301 1K
R302 220
R303 1.5K
R304 150
R305 1.8K
R306 2.2K
R307 390
SW301 NARATION
SW302 COUNTER /TAPE REMAIN
SW303 RESET
SW304 SELF TIMER
SW305 TIME LAPSE
SW306 DATE/TIME
PG303
5V1
SET/ERASE
NEG/POS, SIZE
ON/OFF
TITLE, PAGE
TITLE, DISP.OFF
LOCATION
COLOR, NEG./POS
To TITLER PG403
SET
ERASE
SW309 SET/ERASE
SW310 NEGA/POSI, ERASE SIZE (NEG/POS) (SIZE)
SW311 ERASE ON/OFF (ON/OFF)
SW312 TITLE ON , PAGE (▷)
SW313 TITLE OFF ,DISPLAY OFF (◁) (DISPL OFF)
SW314 LOCATION (△)
SW315 COLOUR (▽)
SW307 WHITE BAL
MANUAL
AUTO
SW308 FOCUS
AUTO
MANUAL
R308 8.2K
RV301 10K-B
WHITE BALANCE CONTROL
PG302
AUTO WHT. BAL
WHT. BAL CONT
FOCUS AUTO
C5V
5V1
To ENCODER PG211

CONTROL P.C.B

CONTROL CIRCUIT BOARD

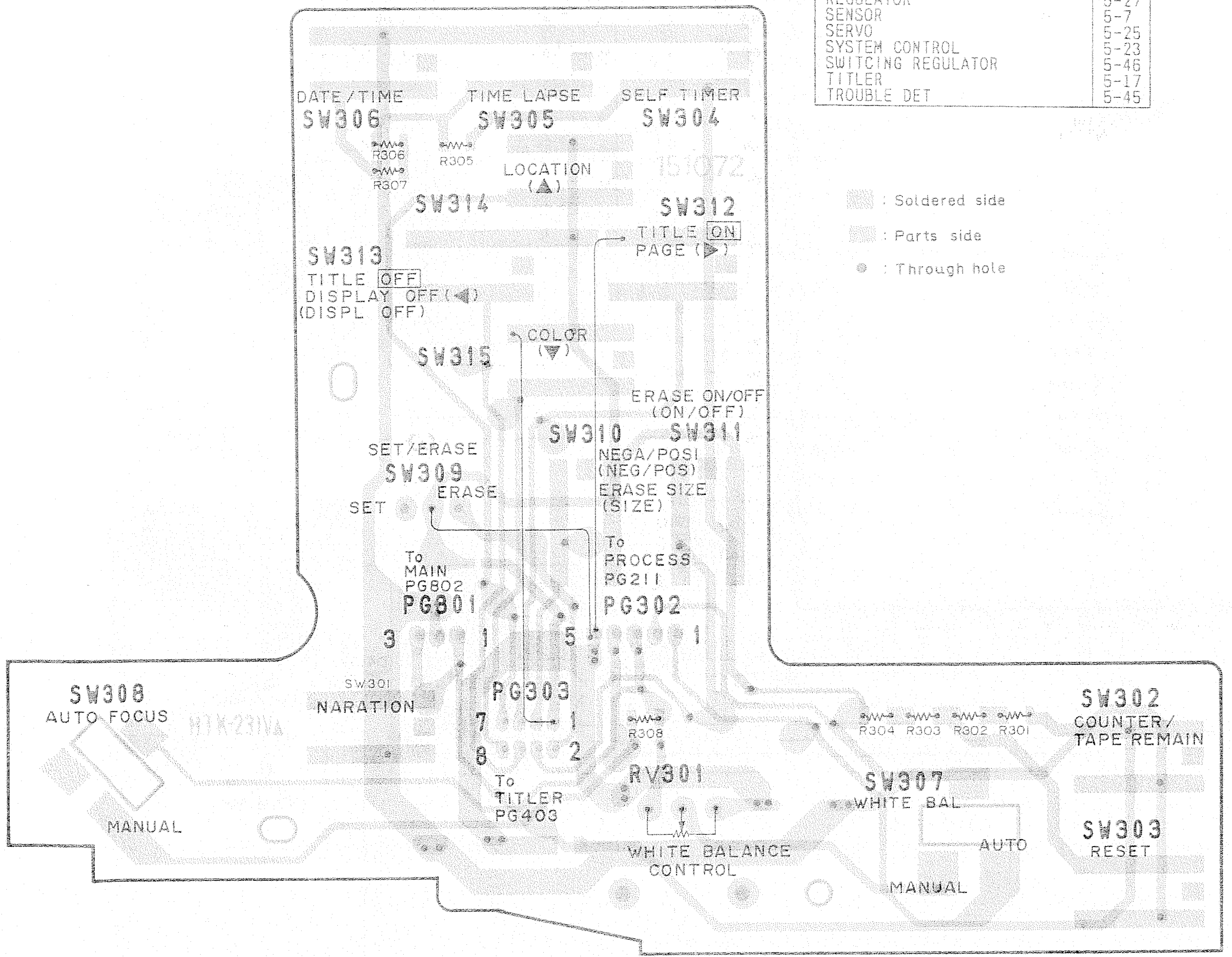
ELECTRONIC VIEWFINDER(EVF) SCHEMATIC


IC801
HA11812FP
VIDEO AMP/ VERTICAL, HORIZONTAL DEFLECTION
AMP
SYNC SEPA
V. SYNC SEPA
PHASE DET
H. PULSE OSC
V. PULSE OSC
VER DRIVER
GND
B+
CN801
H.PULSE
GND
LUMA(EVF)
A8V
To EVF CONNECTOR PG806
EVF CONNECTOR
Q801
2SB468AS(VS)
HORIZ, DRIVE
Q802
2SC2463E (DE)
VIDEO AMP
D801
MA151K (MH)
D802
1SS81-F1
T801
L801 100μ
L802
LINEAR COIL
RT802 470-B
V.SIZE
FOCUS
RT803 1M-B
RT805 1M-B
BRIGHT
PG801 CN1D
V.DEF
H.DEF
VERT
HORIZ
EVF DEFLECTION COIL
CS801
ANODE
H
G3
G1
G2
H.K
CRT SOCKET
V801 CRT
CS801 CRT SOCKET
NOTE : VOLTAGES MARKED X ARE MEASURED USING HIGH VOLTAGE DVM.

ELECTRONIC VIEWFINDER(EVF) P.C.B

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

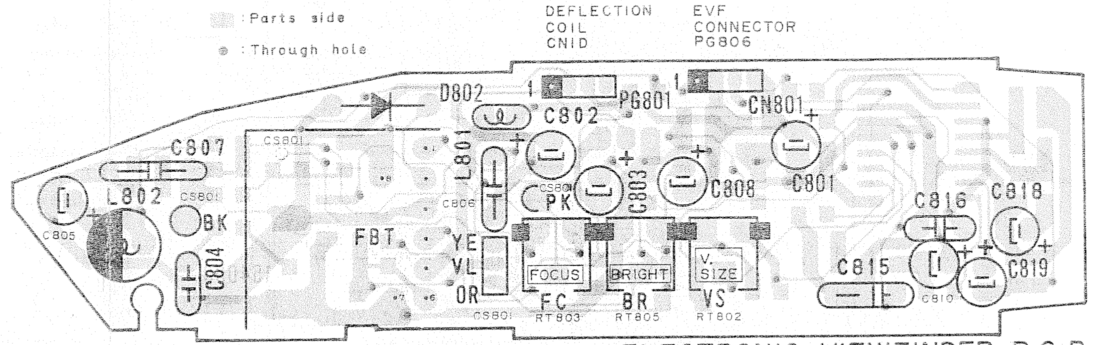
▨ : Soldered side
▨ : Parts side
● : Through hole


DATE/TIME SW306
TIME LAPSE SW305
SELF TIMER SW304
LOCATION (△)
SW314
SW312 TITLE ON PAGE (▷)
SW313 TITLE OFF DISPLAY OFF (◁) (DISPL OFF)
SW315
COLOR (▽)
ERASE ON/OFF (ON/OFF)
SW310 SW311
NEGA/POSI (NEG/POS) ERASE SIZE (SIZE)
SET/ERASE SW309
SET
ERASE
To MAIN PG802
PG801
To PROCESS PG211
PG302
SW308 AUTO FOCUS
MANUAL
SW301 NARATION
PG303
To TITLER PG403
RV301
WHITE BALANCE CONTROL
SW307 WHITE BAL
AUTO
MANUAL
SW302 COUNTER/ TAPE REMAIN
SW303 RESET
R304 R303 R302 R301

CONTROL P.C.B
(COMPONENT SIDE)

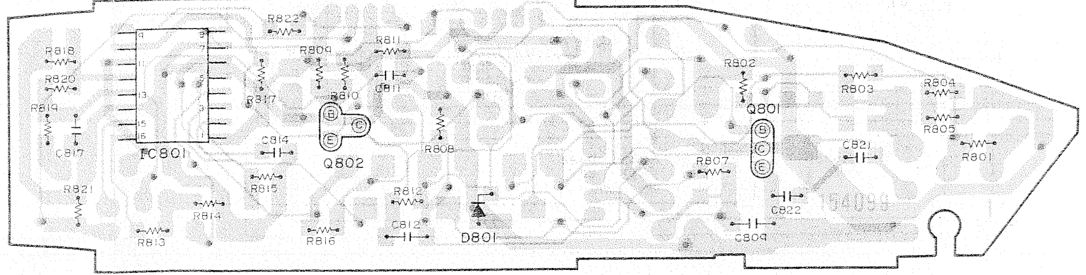
ELECTRONIC VIEWFINDER(EVF) CIRCUIT BOARD

▨ : Soldered side
▨ : Parts side
● : Through hole


To DEFLECTION COIL CN1D
To EVF CONNECTOR PG806
D802
PG801
CN801
C807
L802
L801
C802
C803
C808
C801
C816
C818
C815
C819
C805
C806
C804
FBT
YE
VL
OR
PK
BK
FOCUS FC RT803
BRIGHT BR RT805
V. SIZE VS RT802
CS801

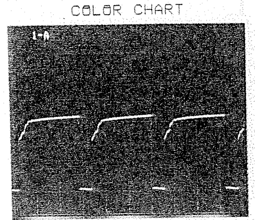
ELECTRONIC VIEWFINDER P.C.B
(COMPONENT SIDE)

▨ : Soldered side
▨ : Parts side
● : Through hole

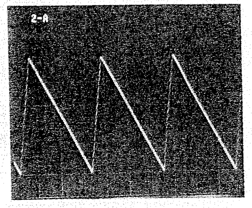

IC801
Q802
Q801
D801
R822
R811
R809
R802
R803
R804
R805
R801
R807
R808
R812
R813
R814
R815
R816
R817
R818
R819
R820
R821
C810
C811
C812
C814
C817
C821
C822
C804

ELECTRONIC VIEWFINDER P. C. B
(SOLDER SIDE)

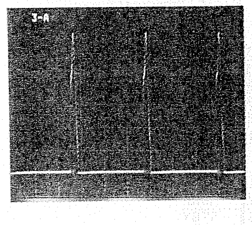
1-A IC801-10 1.7Vp-p
0.5V/20.0μ sec.cm
COLOR CHART



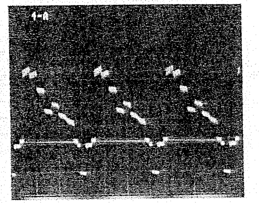
2-A IC801-11 1.0Vp-p
0.2V/20.0μ sec.cm
COLOR CHART



3-A T801-3 120Vp-p
20V/20.0μ sec.cm
COLOR CHART

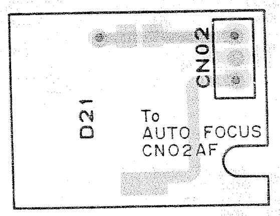


4-A CN801-3 930mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



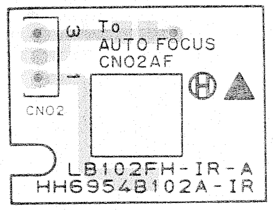
SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

LED CIRCUIT BOARD


CN02
D21
To
AUTO FOCUS
CN02AF

LED P.C.B
(COMPONENT SIDE)

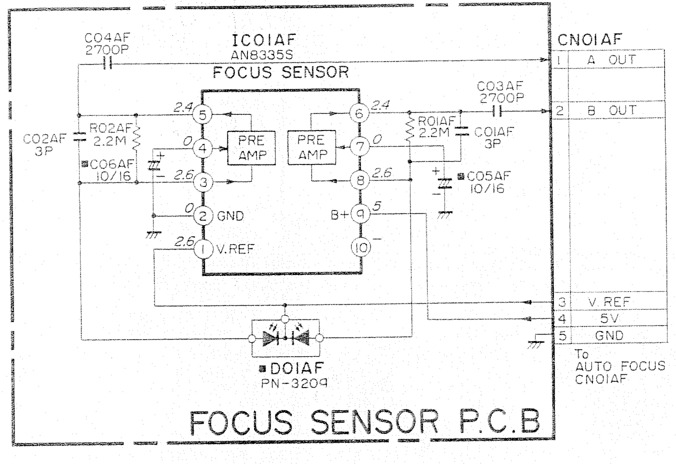
▨ : Soldered side
▨ : Parts side
● : Through hole


ω
To
AUTO FOCUS
CN02AF
CN02
LB102FH-IR-A
HH6954B102A-IR

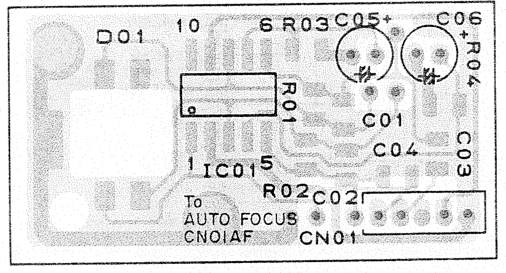
LED P.C.B
(SOLDER SIDE)

▨ : Soldered side
▨ : Parts side
● : Through hole

FOCUS SENSOR SCHEMATIC

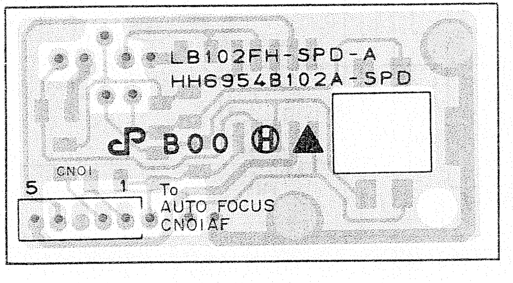

C04AF
2700P
IC01AF
AN8335S
FOCUS SENSOR
CN01AF
1 A OUT
2 B OUT
3 V REF
4 5V
5 GND
C03AF
2700P
C02AF
3P
R02AF
2.2M
C06AF
10/16
PRE AMP
PRE AMP
R01AF
2.2M
C01AF
3P
C05AF
10/16
GND
B+
V.REF
D01AF
PN-3209
To
AUTO FOCUS
CN01AF
FOCUS SENSOR P.C.B

FOCUS SENSOR CIRCUIT BOARD


D01
10
6
R03
C05
C06
R04
R01
C01
C04
C03
IC01
5
1
R02
C02
To
AUTO FOCUS
CN01AF
CN01

FOCUS SENSOR P.C.B
(COMPONENT SIDE)

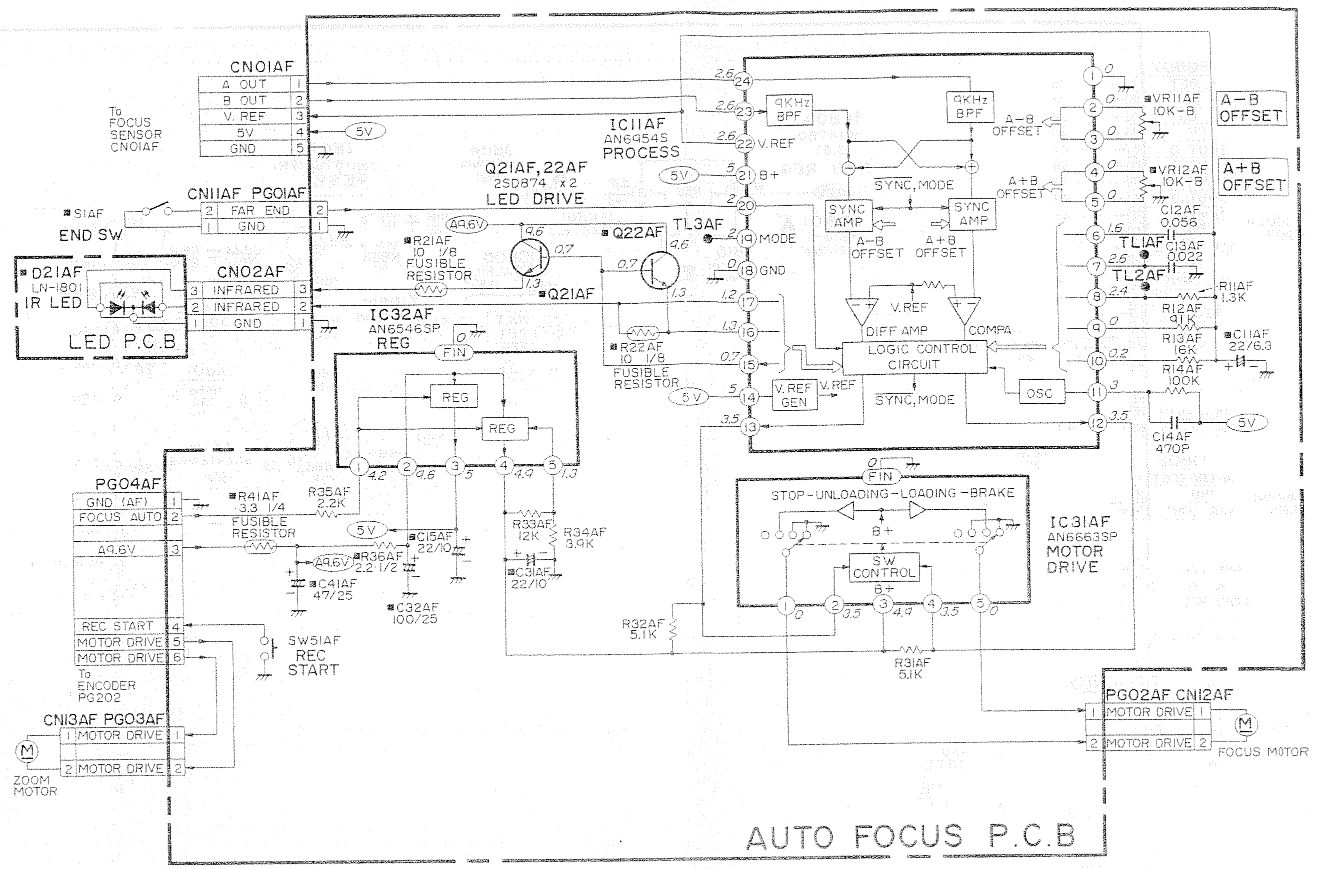
▨ : Soldered side
▨ : Parts side
● : Through hole


LB102FH-SPD-A
HH6954B102A-SPD
B00
CN01
5
1
To
AUTO FOCUS
CN01AF

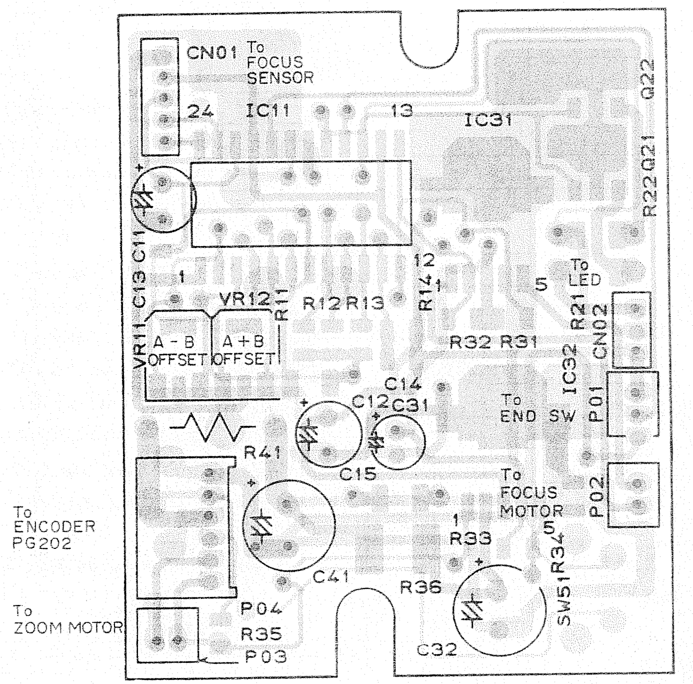
FOCUS SENSOR P.C.B
(SOLDER SIDE)

▨ : Soldered side
▨ : Parts side
● : Through hole

AUTO FOCUS·LED SCHEMATIC

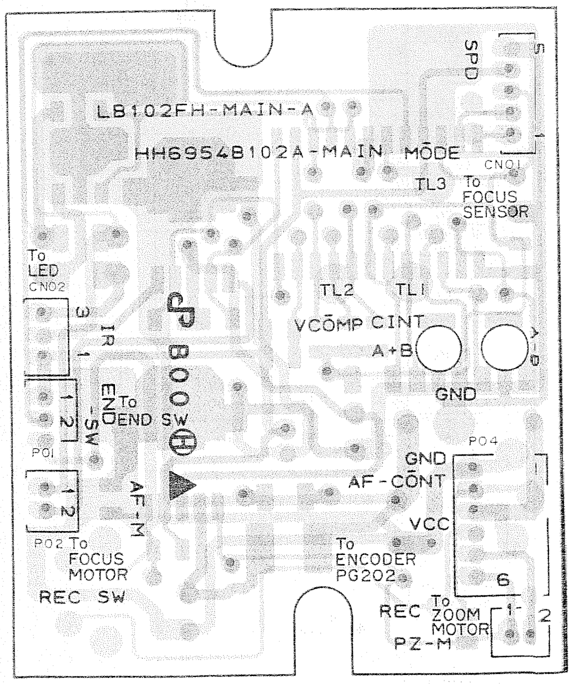

To
FOCUS
SENSOR
CN01AF
CN01AF
A OUT
B OUT
V. REF
5V
GND
IC11AF
AN6454S
PROCESS
Q21AF,22AF
2SD874 x2
LED DRIVE
CN11AF PG01AF
FAR END
GND
S1AF
END SW
D21AF
LN-1801
IR LED
LED P.C.B
CN02AF
INFRARED
INFRARED
GND
R21AF
10 1/8
FUSIBLE
RESISTOR
Q22AF
Q21AF
TL3AF
MODE
GND
R22AF
10 1/8
FUSIBLE
RESISTOR
IC32AF
AN6546SP
REG
REG
REG
3KHz BPF
3KHz BPF
A-B OFFSET
A+B OFFSET
SYNC, MODE
SYNC AMP
SYNC AMP
V.REF
DIFF AMP
COMPA
LOGIC CONTROL CIRCUIT
V.REF GEN
V.REF
SYNC, MODE
OSC
VR11AF
10K-B
A-B OFFSET
VR12AF
10K-B
A+B OFFSET
C12AF
0.056
TL1AF
C13AF
0.022
TL2AF
R11AF
1.3K
R12AF
91K
R13AF
16K
C11AF
22/6.3
R14AF
100K
C14AF
470P
5V
PG04AF
GND (AF)
FOCUS AUTO
A9.6V
R41AF
3.3 1/4
FUSIBLE
RESISTOR
R35AF
2.2K
C15AF
22/10
R36AF
2.2 1/2
C41AF
47/25
C32AF
100/25
R33AF
12K
R34AF
3.9K
C31AF
22/10
REC START
MOTOR DRIVE
MOTOR DRIVE
To
ENCODER
PG202
SW51AF
REC
START
STOP-UNLOADING-LOADING-BRAKE
SW CONTROL
IC31AF
AN6663SP
MOTOR
DRIVE
R32AF
5.1K
R31AF
5.1K
CN13AF PG03AF
MOTOR DRIVE
MOTOR DRIVE
ZOOM
MOTOR
PG02AF CN12AF
MOTOR DRIVE
MOTOR DRIVE
FOCUS MOTOR
AUTO FOCUS P.C.B

AUTO FOCUS CIRCUIT BOARD


CN01 To
FOCUS
SENSOR
24
IC11
13
IC31
Q22
Q21
R22
C11
C13
1
12
VR12
R11
R12
R13
R14
5
To
LED
R21
CN02
VR11
A-B
OFFSET
A+B
OFFSET
R32
R31
IC32
C14
C12
C31
To
END SW
P01
R41
C15
To
FOCUS
MOTOR
P02
R33
R34
SW51
C41
R36
P04
R35
P03
C32
To
ENCODER
PG202
To
ZOOM MOTOR

AUTO FOCUS P.C.B
(COMPONENT SIDE)

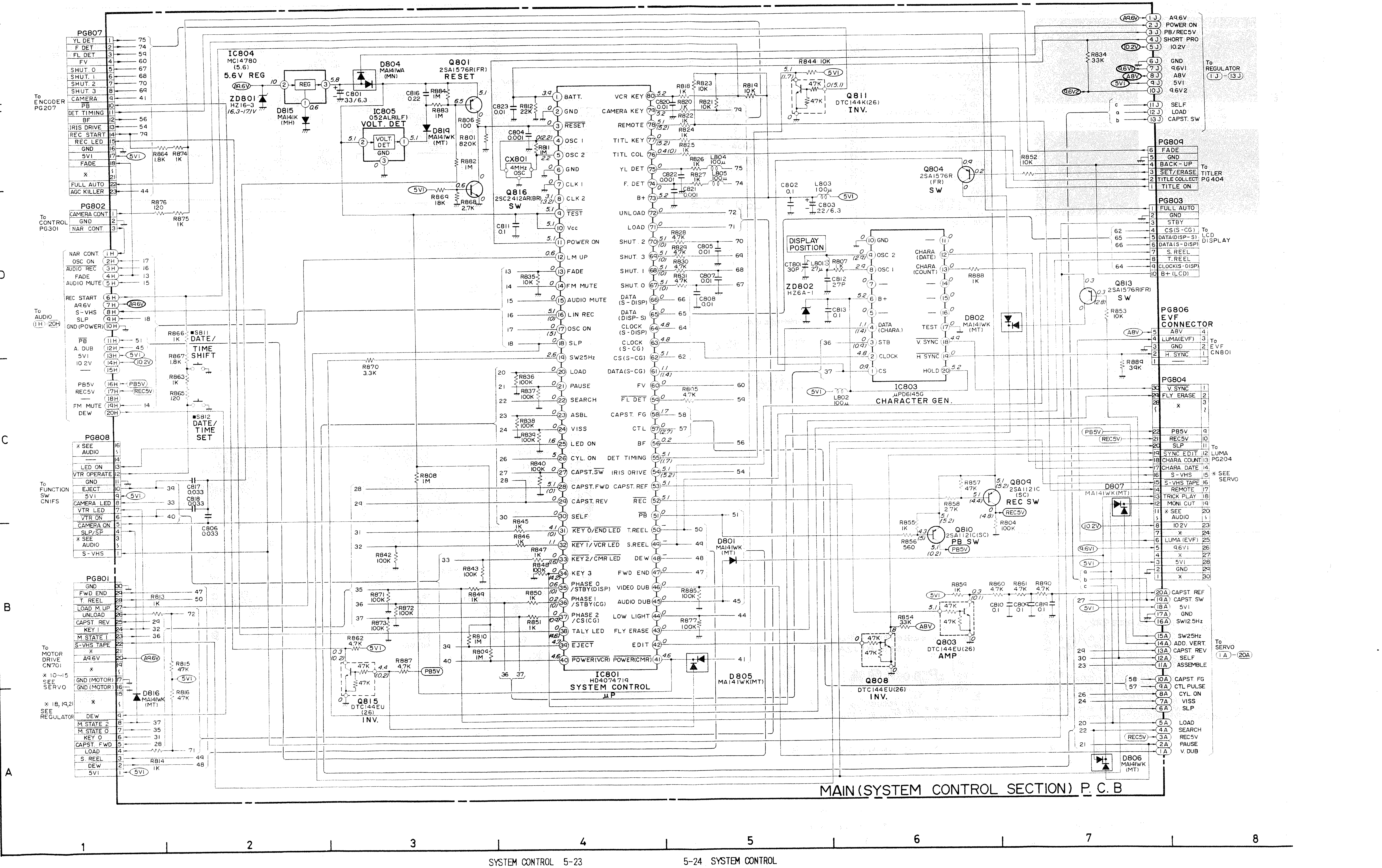
▨ : Soldered side
▨ : Parts side
● : Through hole


SPD
LB102FH-MAIN-A
HH6954B102A-MAIN
MODE
CN01
TL3
To
FOCUS
SENSOR
To
LED
CN02
IR
TL2
TL1
VCOMP
CINT
A+B
A-B
B00
To
END SW
END-SW
P01
GND
AF-M
GND
P04
AF-CONT
VCC
P02
To
FOCUS
MOTOR
REC SW
To
ENCODER
PG202
REC
To
ZOOM
MOTOR
PZ-M

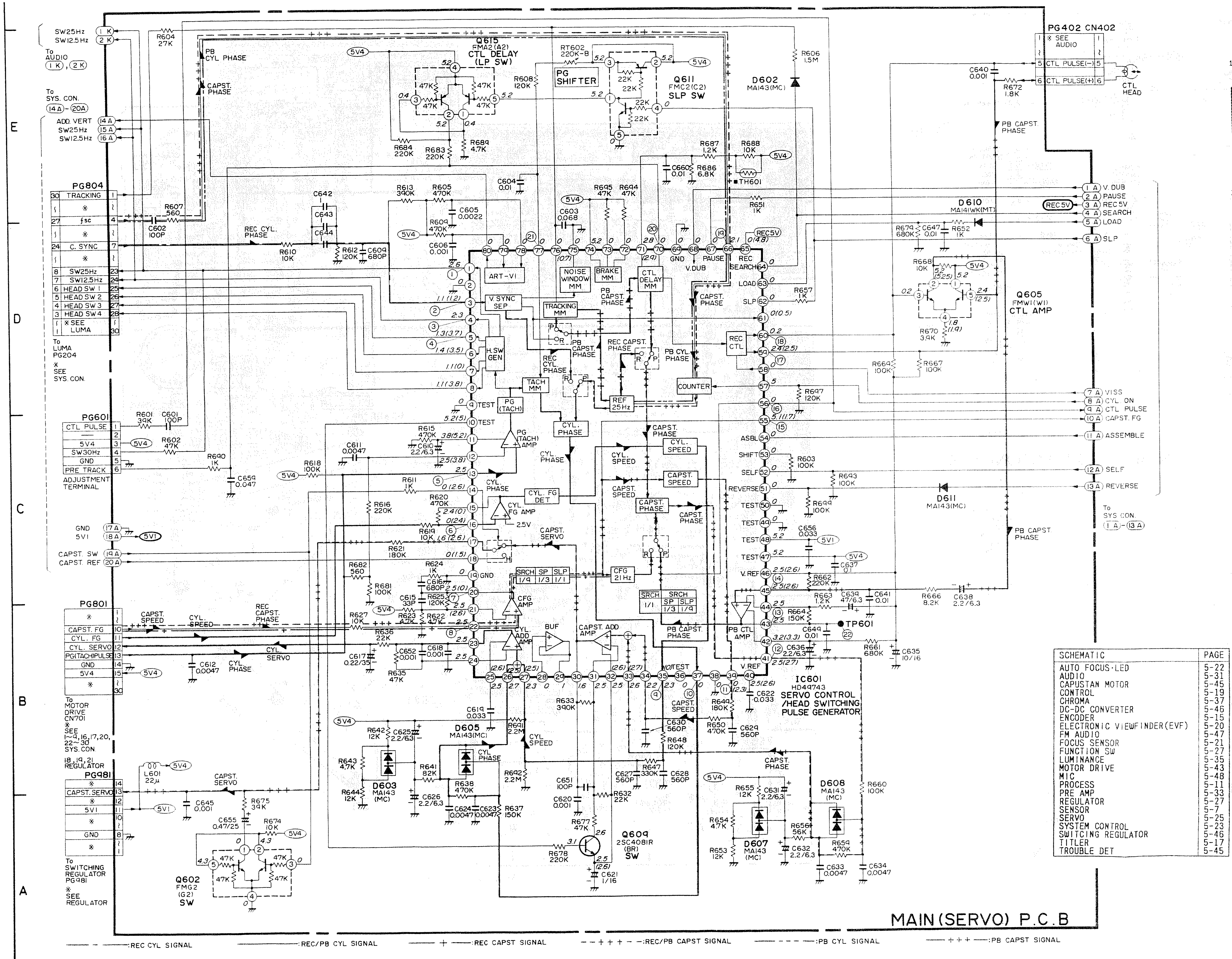
AUTO FOCUS P.C.B
(SOLDER SIDE)

▨ : Soldered side
▨ : Parts side
● : Through hole

AIN (SYSTEM CONTROL SECTION) SCHEMATIC


MAIN (SYSTEM CONTROL SECTION) P. C. B
IC801
HD404719
SYSTEM CONTROL
μP
IC804
MC14780
(5.6)
5.6V REG
REG
ZD801
HZ16-3
(16.3~17.1V)
D815
MA141K
(MH)
D804
MA141WA
(MN)
C801
33/6.3
Q801
2SA1576R(FR)
RESET
IC805
052ALR(LF)
VOLT. DET
VOLT. DET
GND
D819
MA141WK
(MT)
R801
820K
R806
100
R882
1M
R883
1M
R884
1M
C816
0.22
R869
18K
R868
2.7K
Q816
2SC2412AR(BR)
SW
CX801
4MHz
OSC
C804
0.001
R811
1M
C823
0.01
R812
22K
C811
0.1
BATT.
GND
RESET
OSC 1
OSC 2
GND
CLK 1
CLK 2
TEST
Vcc
POWER ON
LM UP
FADE
FM MUTE
AUDIO MUTE
LIN REC
OSC ON
SLP
SW25Hz
LOAD
PAUSE
SEARCH
ASBL
VISS
LED ON
CYL. ON
CAPST. SW
CAPST. FWD
CAPST. REV
SELF
KEY 0/END LED
KEY 1/VCR LED
KEY 2/CMR LED
KEY 3
PHASE 0 /STBY(DISP)
PHASE 1 /STBY(CG)
PHASE 2 /CS(CG)
TALY LED
EJECT
POWER(VCR)
POWER(CMR)
EDIT
FLY ERASE
LOW LIGHT
AUDIO DUB
VIDEO DUB
FWD END
DEW
S.REEL
T.REEL
PB
REC
CAPST. REF
IRIS DRIVE
DET TIMING
BF
CTL
CAPST. FG
FL DET
FV
DATA(S-CG)
CS(S-CG)
CLOCK (S-CG)
CLOCK (DISP-S)
DATA (DISP-S)
DATA (S-DISP)
SHUT. 0
SHUT. 1
SHUT. 3
SHUT. 2
LOAD
UNLOAD
B+
F. DET
YL DET
TITL COL
TITL KEY
REMOTE
CAMERA KEY
VCR KEY
PG807
YL DET
F DET
FL DET
FV
SHUT. 0
SHUT. 1
SHUT. 2
SHUT. 3
CAMERA
PB
DET TIMING
BF
IRIS DRIVE
REC START
REC LED
GND
5V1
FADE
FULL AUTO
AGC KILLER
To ENCODER PG207
PG802
CAMERA CONT
GND
NAR CONT
To CONTROL PG301
NAR CONT
OSC ON
AUDIO REC
FADE
AUDIO MUTE
REC START
A9.6V
S-VHS
SLP
GND (POWER)
A. DUB
5V1
10.2V
PB5V
REC5V
FM MUTE
DEW
To AUDIO (1H)~(20H)
S811
DATE/ TIME SHIFT
S812
DATE/ TIME SET
R866 1K
R867 1.8K
R863 1K
R865 120
R864 1.8K
R874 1K
R876 120
R875 1K
R870 3.3K
PG808
× SEE AUDIO
LED ON
VTR OPERATE
GND
EJECT
5V1
CAMERA LED
VTR LED
VTR ON
CAMERA ON
SLP/SP
× SEE AUDIO
S-VHS
To FUNCTION SW CN1FS
C817 0.033
C818 0.033
C806 0.033
PG801
GND
FWD END
T. REEL
LOAD M. UP
CAPST. REV
UNLOAD
KEY 1
M. STATE 1
S-VHS TAPE
A9.6V
GND (MOTOR)
DEW
M. STATE 2
M. STATE 0
KEY 0
CAPST. FWD
LOAD
S. REEL
DEW
5V1
To MOTOR DRIVE CN701
× 10~15 SEE SERVO
× 18, 19, 21 SEE REGULATOR
D816
MA141WK
(MT)
R813 1K
R814 1K
R815 47K
R816 47K
Q815
DTC144EU
(26)
INV.
R862 4.7K
R887 4.7K
R808 1M
R842 100K
R843 100K
R871 100K
R872 100K
R873 100K
R810 1M
R804 1M
R849 1K
R850 1K
R851 1K
R845 1K
R846 1K
R847 1K
R848 100K
R840 100K
R836 100K
R837 100K
R838 100K
R839 100K
R835 10K
Q811
DTC144K(26)
INV.
R844 10K
R818 1K
R823 10K
R819 10K
R821 10K
R820 1K
R822 1K
R824 1K
R825 1K
R826 1K
R827 1K
C820 0.01
C822 0.001
C821 0.001
L804 100μ
L805 100μ
C802 0.1
L803 100μ
C803 22/6.3
R828 47K
R829 47K
R830 47K
R831 47K
C805 0.01
C807 0.01
C808 0.01
R815 4.7K
R885 100K
R877 100K
DISPLAY POSITION
CT801 30P
L801 27μ
R807 1K
C812 27P
ZD802
HZ6A-1
C813 0.1
L802 100μ
IC803
μPD6145G
CHARACTER GEN.
GND
OSC 2
OSC 1
B+
DATA (CHARA)
STB
CLOCK
CS
CHARA (DATE)
CHARA (COUNT)
TEST
V. SYNC
H. SYNC
HOLD
R888 1K
D802
MA141WK
(MT)
Q804
2SA1576R
(FR)
SW
Q813
2SA1576R(FR)
SW
R853 10K
R852 10K
R889 39K
R834 33K
Q809
2SA1121C
(SC)
REC SW
R857 47K
R858 2.7K
R804 100K
Q810
2SA1121C(SC)
PB SW
R855 1K
R856 560
D801
MA141WK
(MT)
D805
MA141WK(MT)
Q803
DTC144EU(26)
AMP
R859 1K
R860 4.7K
R861 4.7K
R890 4.7K
C810 0.1
C809 0.1
C819 0.1
R854 33K
Q808
DTC144EU(26)
INV.
D807
MA141WK(MT)
D806
MA141WK
(MT)
A9.6V
POWER ON
PB/REC5V
SHORT PRO
10.2V
GND
9.6V1
A8V
5V1
9.6V2
SELF
LOAD
CAPST. SW
To REGULATOR (1J)~(13J)
PG809
FADE
GND
BACK-UP
SET/ERASE
TITLE COLLECT
TITLE ON
To TITLER PG404
PG803
FULL AUTO
GND
STBY
CS(S-CG)
DATA(DISP-S)
DATA(S-DISP)
S. REEL
T. REEL
CLOCK(S-DISP)
B+(LCD)
To LCD DISPLAY
PG806
EVF CONNECTOR
A8V
LUMA(EVF)
GND
H. SYNC
To EVF CN801
PG804
V. SYNC
FLY ERASE
PB5V
REC5V
SLP
SYNC EDIT
CHARA COUNT
CHARA DATE
S-VHS
S-VHS TAPE
REMOTE
TRICK PLAY
MONI CUT
× SEE AUDIO
10.2V
LUMA (EVF)
9.6V1
5V1
GND
To LUMA PG204
× SEE SERVO
CAPST. REF
CAPST. SW
5V1
GND
SW12.5Hz
SW25Hz
ADD. VERT.
CAPST. REV
SELF ASSEMBLE
CAPST. FG
CTL PULSE
CYL. ON
VISS
SLP
LOAD
SEARCH
REC5V
PAUSE
V. DUB
To SERVO (1A)~(20A)
1
2
3
4
5
6
7
8
A
B
C
D
E

MAIN (SERVO SECTION) SCHEMATIC



E
D
C
B
A
1
2
3
4
5
6
7
8
SW25Hz (1K)
SW12.5Hz (2K)
To AUDIO (1K),(2K)
To SYS. CON. (14A)-(20A)
ADD. VERT (14A)
SW25Hz (15A)
SW12.5Hz (16A)
PG804
TRACKING
fsc
C. SYNC
SW25Hz
SW12.5Hz
HEAD SW 1
HEAD SW 2
HEAD SW 3
HEAD SW 4
※ SEE LUMA
To LUMA PG204
※ SEE SYS. CON.
PG601
CTL PULSE
5V4
SW30Hz
GND
PRE TRACK
ADJUSTMENT TERMINAL
GND (17A)
5V1 (18A)
CAPST. SW (19A)
CAPST. REF (20A)
PG801
CAPST. FG
CYL. FG
CYL. SERVO
PG(TACH)PULSE
GND
5V4
To MOTOR DRIVE CN701
※ SEE 1~9,16,17,20, 22~30 SYS. CON.
18,19,21 REGULATOR
PG981
CAPST. SERVO
5V1
GND
To SWITCHING REGULATOR PG981
※ SEE REGULATOR
L601 22μ
Q602 FMG2 (G2) SW
Q615 FMA2(A2) CTL DELAY (LP SW)
RT602 220K-B
PG SHIFTER
Q611 FMC2(C2) SLP SW
D602 MA143(MC)
R606 1.5M
PG402 CN402
※ SEE AUDIO
CTL PULSE(-)
CTL PULSE(+)
CTL HEAD
C640 0.001
R672 1.8K
PB CAPST PHASE
TH601
D610 MA141WK(MT)
Q605 FMW1(W1) CTL AMP
V. DUB
PAUSE
REC5V
SEARCH
LOAD
SLP
VISS
CYL ON
CTL PULSE
CAPST. FG
ASSEMBLE
SELF
REVERSE
To SYS. CON. (1A)-(13A)
D611 MA143(MC)
ART-V1
V. SYNC SEP
NOISE WINDOW MM
BRAKE MM
CTL DELAY MM
TRACKING MM
H.SW GEN
PG (TACH)
TACH MM
REC CTL
COUNTER
REF 25Hz
PG (TACH) AMP
CYL. FG DET
CYL. FG AMP
CYL. SPEED
CAPST. SPEED
CAPST. PHASE
CFG 21Hz
SRCH 1/9 SP 1/3 SLP 1/1
CFG AMP
BUF
CYL. ADD AMP
CAPST. ADD AMP
PB CTL AMP
TP601
IC601 HD49743 SERVO CONTROL /HEAD SWITCHING PULSE GENERATOR
D605 MA143(MC)
D603 MA143 (MC)
Q609 2SC4081R (BR) SW
D607 MA143 (MC)
D608 MA143 (MC)
MAIN(SERVO) P.C.B
:REC CYL SIGNAL
:REC/PB CYL SIGNAL
:REC CAPST SIGNAL
:REC/PB CAPST SIGNAL
:PB CYL SIGNAL
:PB CAPST SIGNAL

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CHROMA	5-19
CONTROL	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
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FUNCTION SW	5-27
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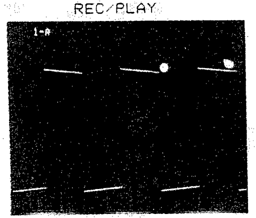
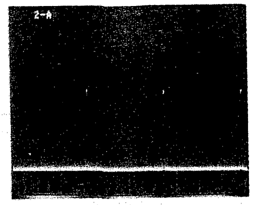
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

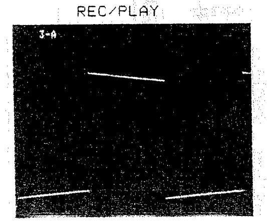
1-A IC601-1 5.0Vp-p 1V/10.0msec.cm REC/PLAY



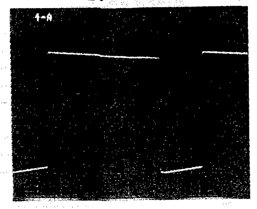
2-A IC601-3 3.5Vp-p 1V/5.0msec.cm REC/PLAY



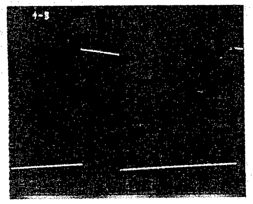
3-A IC601-4 4.8Vp-p 1V/10.0msec.cm REC/PLAY



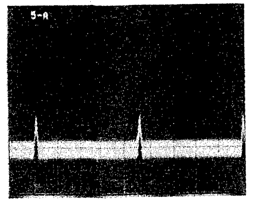
4-A IC601-5 5.2Vp-p 1V/10.0msec.cm REC



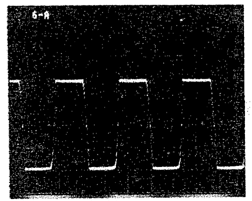
4-B IC601-5 5.4Vp-p 1V/10.0msec.cm PLAY



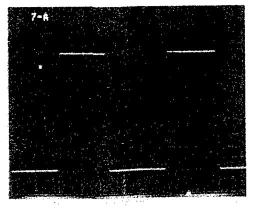
5-A IC601-13 100mVp-p 50mV/5.0msec.cm REC/PLAY



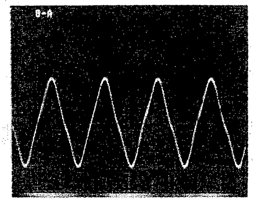
6-A IC601-16 4.0Vp-p 1V/500μ sec.cm REC/PLAY



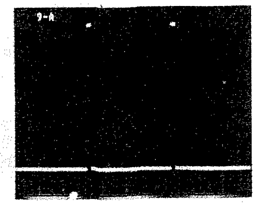
7-A IC601-20 5.2Vp-p 1V/100μ sec.cm REC/PLAY



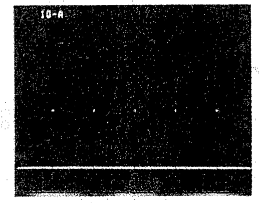
8-A IC601-22 2.0Vp-p 0.5V/200μ sec.cm REC/PLAY



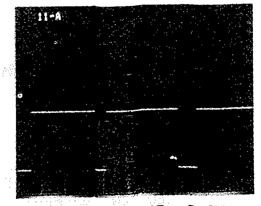
9-A IC601-35 1.3Vp-p 0.5V/20.0μ sec.cm REC/PLAY



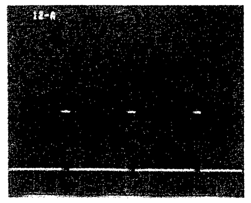
10-A IC601-37 1.3Vp-p 0.5V/20.0μ sec.cm REC/PLAY



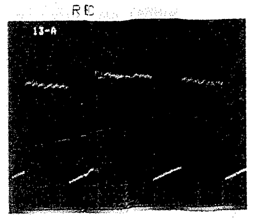
11-A IC601-39 1.3Vp-p 0.5V/20.0μ sec.cm REC/PLAY



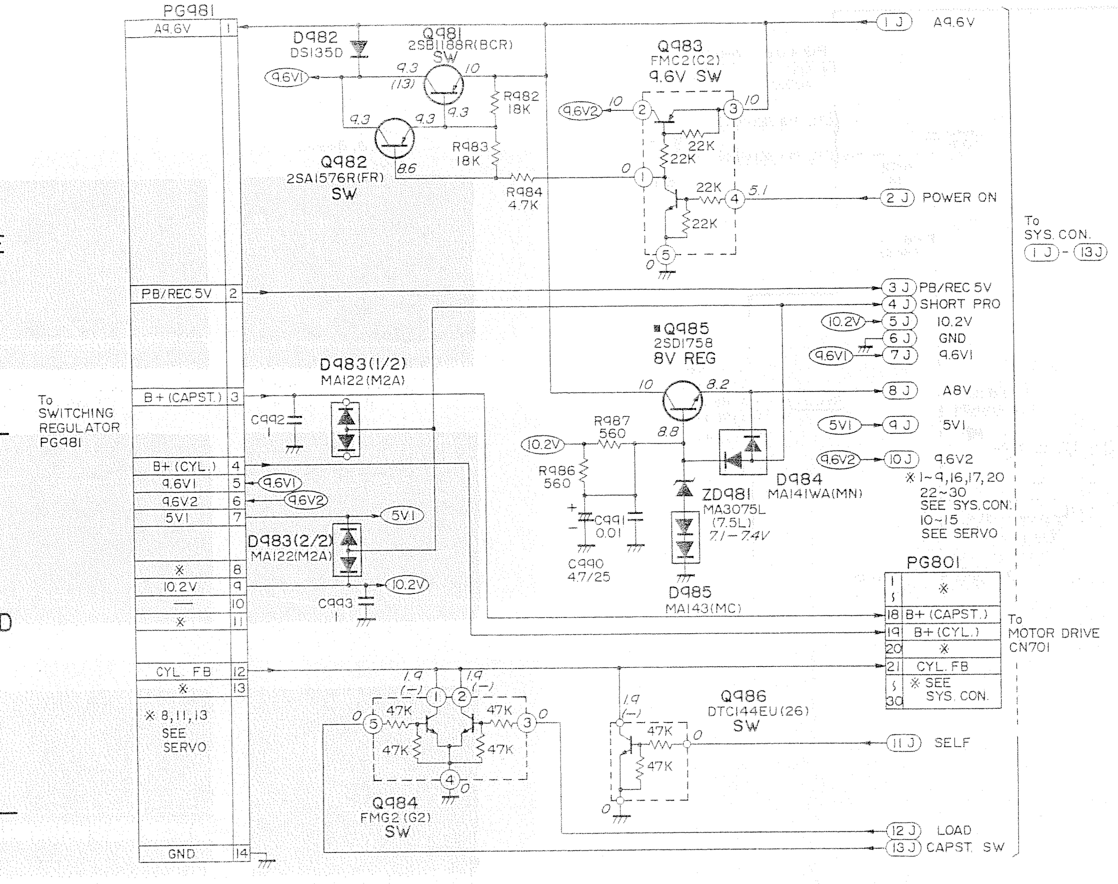
12-A IC601-41 1.3Vp-p 0.5V/50.0μ sec.cm REC/PLAY



13-A IC601-43 2.5Vp-p 0.5V/10.0msec.cm REC



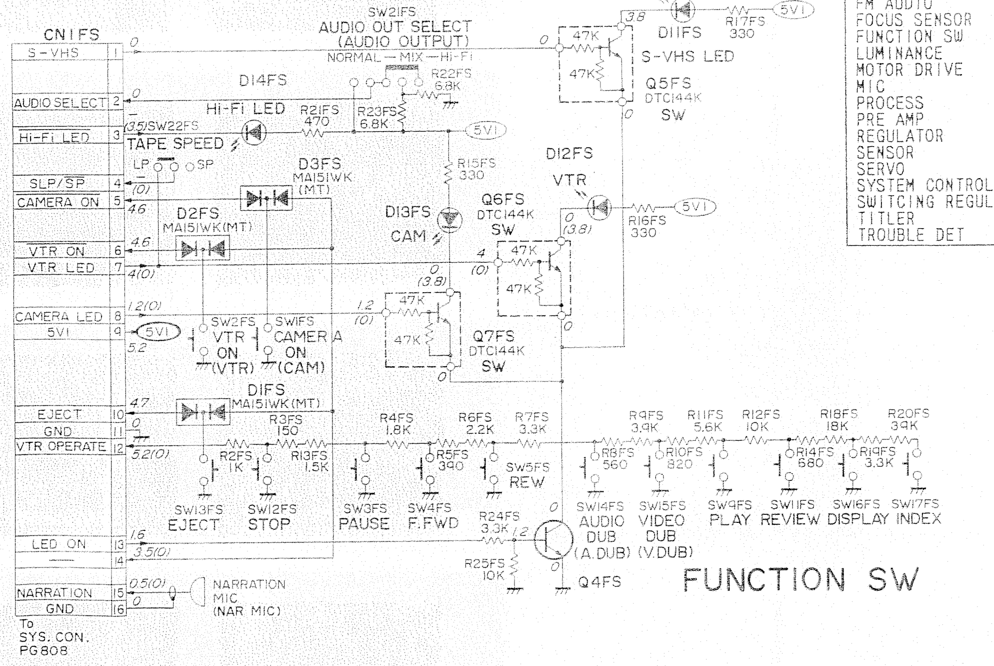
AIN (REGULATOR SECTION) SCHEMATIC


PG981
A9.6V
D982 DS135D
Q981 2SB1188R(BCR) SW
Q982 2SA1576R(FR) SW
R982 18K
R983 18K
R984 4.7K
Q983 FMC2(C2) 9.6V SW
22K
1J A9.6V
2J POWER ON
To SYS.CON. 1J - 13J
PB/REC 5V
3J PB/REC 5V
4J SHORT PRO
5J 10.2V
6J GND
7J 9.6VI
8J A8V
9J 5VI
10J 9.6V2
※1~9,16,17,20 22~30 SEE SYS.CON. 10~15 SEE SERVO
B+(CAPST.)
B+(CYL.)
9.6VI
9.6V2
5VI
10.2V
CYL. FB
※8,11,13 SEE SERVO
GND
To SWITCHING REGULATOR PG981
D983(1/2) MA122(M2A)
D983(2/2) MA122(M2A)
C992
C993
■Q985 2SD1758 8V REG
R987 560
R986 560
C991 0.01
C990 47/25
ZD981 MA3075L (7.5L) 7.1~7.4V
D984 MA141WA(MN)
D985 MA143(MC)
PG801
B+(CAPST.)
B+(CYL.)
CYL. FB
※SEE SYS.CON.
To MOTOR DRIVE CN701
Q984 FMG2(G2) SW
47K
Q986 DTC144EU(26) SW
11J SELF
12J LOAD
13J CAPST. SW

MAIN(REGLATOR SECTION) P.C.B

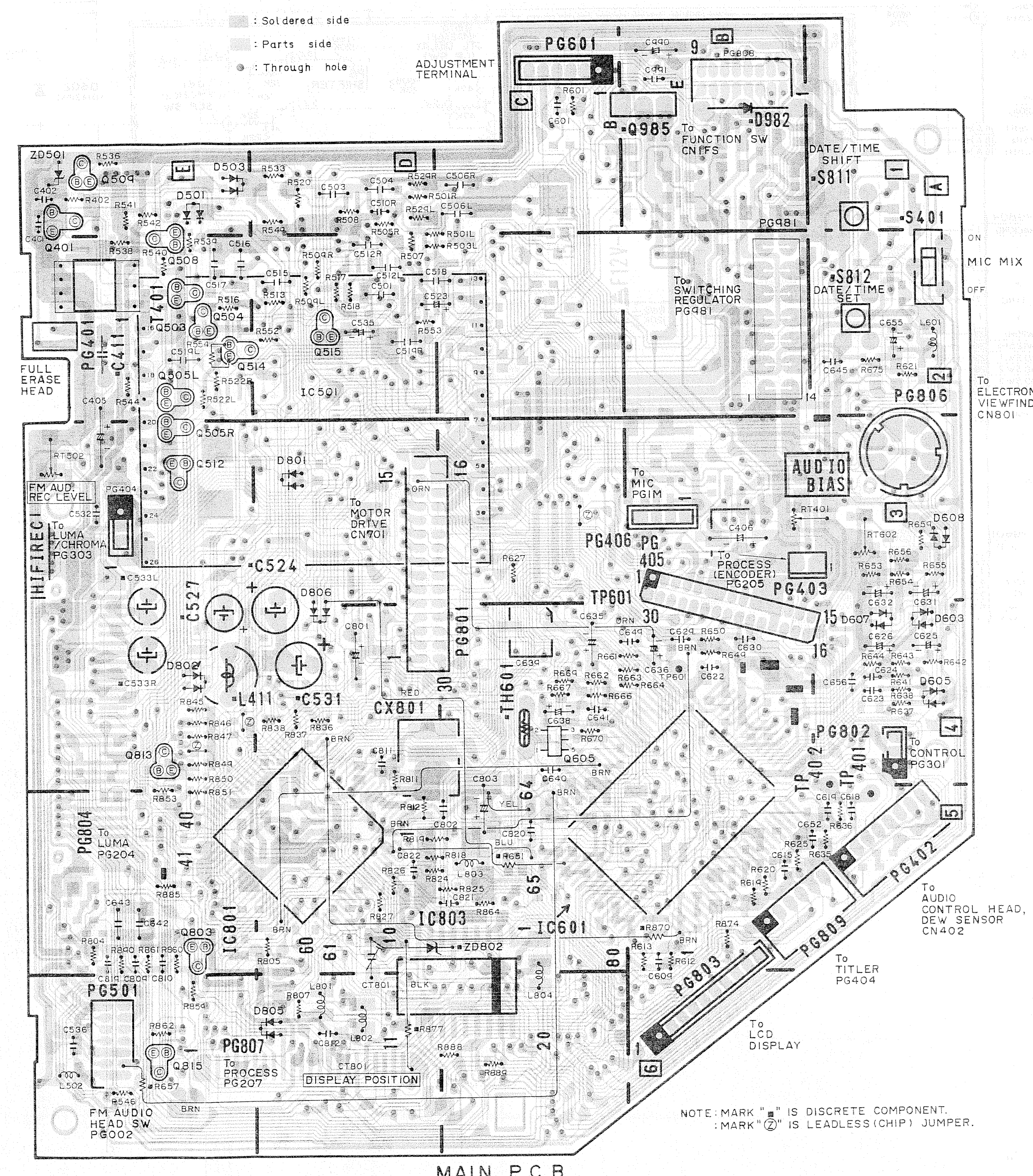
SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

FUNCTION SW SCHEMATIC (Reference)


CN1FS
S-VHS
AUDIO SELECT
Hi-Fi LED
SLP/SP
CAMERA ON
VTR ON
VTR LED
CAMERA LED
5VI
EJECT
GND
VTR OPERATE
LED ON
NARRATION
GND
To SYS. CON. PG808
SW21FS AUDIO OUT SELECT (AUDIO OUTPUT)
NORMAL — MIX — Hi-Fi
D11FS S-VHS LED
R17FS 330
Q5FS DTC144K SW
D14FS Hi-Fi LED
R21FS 470
R23FS 6.8K
R22FS 6.8K
SW22FS TAPE SPEED
LP SP
D3FS MA151WK (MT)
D2FS MA151WK(MT)
D12FS VTR
D13FS CAM
Q6FS DTC144K SW
R15FS 330
R16FS 330
Q7FS DTC144K SW
SW2FS VTR ON (VTR)
SW1FS CAMERA ON (CAM)
D1FS MA151WK(MT)
R3FS 150
R2FS 1K
R13FS 1.5K
R4FS 1.8K
R5FS 390
R6FS 2.2K
R7FS 3.3K
R8FS 3.9K
R9FS 560
R11FS 5.6K
R10FS 820
R12FS 10K
R14FS 680
R18FS 18K
R19FS 3.3K
R20FS 39K
SW13FS EJECT
SW12FS STOP
SW3FS PAUSE
SW4FS F.FWD
SW5FS REW
SW14FS AUDIO DUB (A.DUB)
SW15FS VIDEO DUB (V.DUB)
SW9FS PLAY
SW8FS REVIEW
SW16FS DISPLAY
SW17FS INDEX
R24FS 3.3K
R25FS 10K
Q4FS
NARRATION MIC (NAR MIC)

FUNCTION SW

MAIN CIRCUIT BOARD — COMPONENT SIDE —

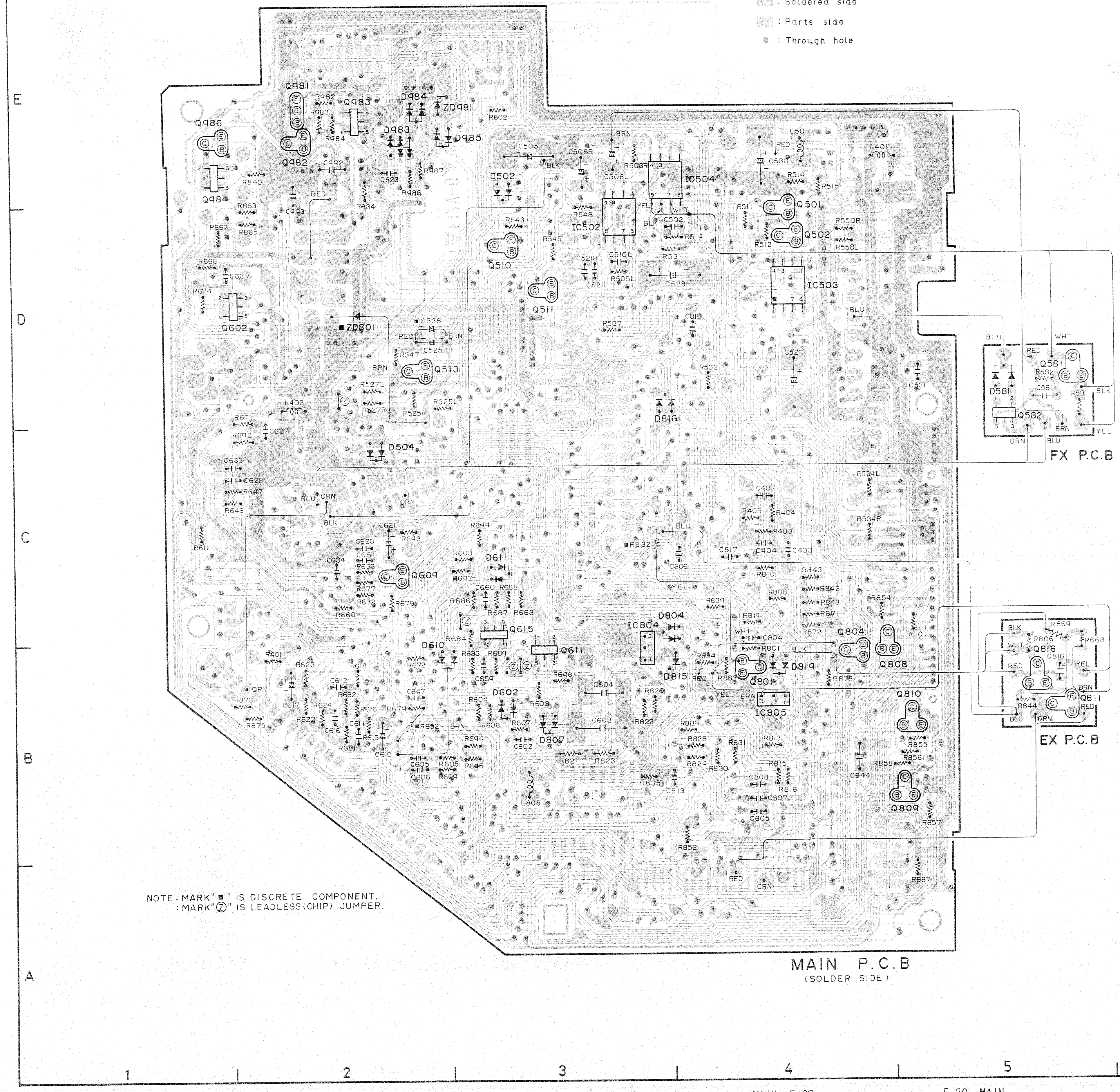

: Soldered side
: Parts side
: Through hole
ADJUSTMENT TERMINAL
PG601
Q985
D982
To FUNCTION SW CN1FS
DATE/TIME SHIFT S811
S401
ON
MIC MIX
OFF
S812 DATE/TIME SET
To SWITCHING REGULATOR PG981
PG981
To ELECTRONIC VIEWFINDER CN801
PG806
AUDIO BIAS
FULL ERASE HEAD
PG401
C411
T401
IC501
Q515
Q505R
D801
FM AUD. REC LEVEL
PG404
To LUMA/CHROMA PG303
HIFIREC
To MOTOR DRIVE CN701
To MIC PG1M
PG406
PG405
To PROCESS (ENCODER) PG205
PG403
TP601
C524
C527
D806
C531
L411
D802
PG801
CX801
TH601
PG802
TP402
TP401
To CONTROL PG301
PG804
To LUMA PG204
IC801
IC803
IC601
ZD802
Q813
Q803
PG501
D805
PG807
To PROCESS PG207
DISPLAY POSITION
Q815
FM AUDIO HEAD SW PG002
PG402
To AUDIO CONTROL HEAD, DEW SENSOR CN402
PG809
To TITLER PG404
PG803
To LCD DISPLAY

NOTE: MARK "■" IS DISCRETE COMPONENT.
: MARK "Ⓩ" IS LEADLESS(CHIP) JUMPER.

MAIN P.C.B
(COMPONENT SIDE)

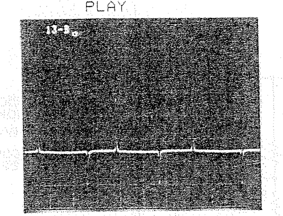
MAIN CIRCUIT BOARD —SOLDER SIDE—

▨ : Soldered side
▨ : Parts side
● : Through hole

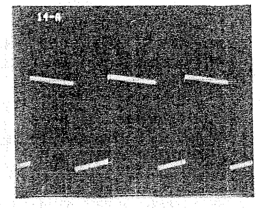

MAIN P.C.B
(SOLDER SIDE)
FX P.C.B
EX P.C.B
Q981
Q982
Q983
Q984
Q986
D984
ZD981
D983
D985
D502
C505
C508R
IC504
IC502
IC503
L501
L401
Q501
Q502
Q510
Q511
Q513
ZD601
Q602
D504
D816
Q581
Q582
D581
Q609
D611
Q615
Q611
D610
D602
D807
IC804
D804
D815
Q801
D819
IC805
Q804
Q808
Q816
Q810
Q811
Q809
L805
L402
BLU
WHT
RED
BLK
BRN
ORN
YEL
E
D
C
B
A
1
2
3
4
5
6
7
8

NOTE : MARK" ■ " IS DISCRETE COMPONENT.
: MARK" Ⓩ " IS LEADLESS(CHIP) JUMPER.

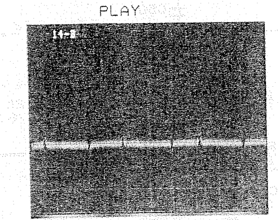
13-B IC601-43 3.8Vp-p
1V/10.0msec.cm
PLAY



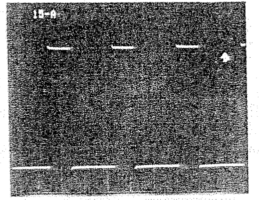
14-A IC601-45 850mVp-p
0.2V/10.0msec.cm
REC



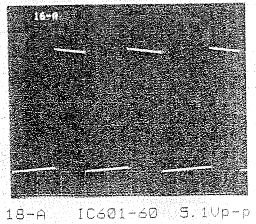
14-B IC601-45 200mVp-p
50mV/10.0msec.cm
PLAY



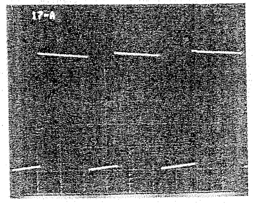
15-A IC601-55 5.3Vp-p
1V/500μ sec.cm
REC/PLAY



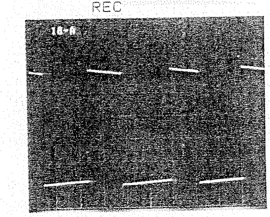
16-A IC601-56 5.3Vp-p
1V/10.0msec.cm
REC/PLAY



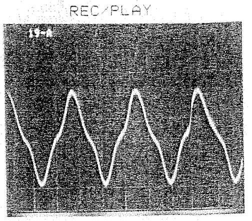
17-A IC601-59 5.1Vp-p
1V/10.0msec.cm
REC



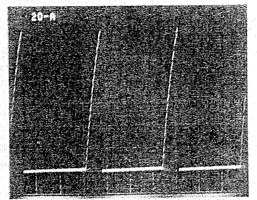
18-A IC601-60 5.1Vp-p
1V/10.0msec.cm
REC



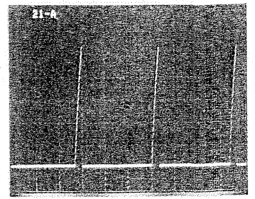
19-A IC601-66 420mVp-p
0.1V/100nsec.cm
REC/PLAY



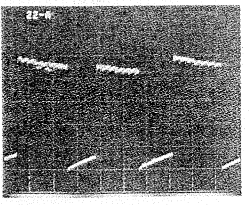
20-A IC601-70 3.1Vp-p
0.5V/10.0msec.cm
REC/PLAY



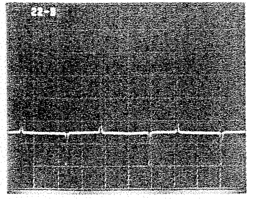
21-A IC601-77 2.7Vp-p
0.5V/5.0msec.cm
REC/PLAY



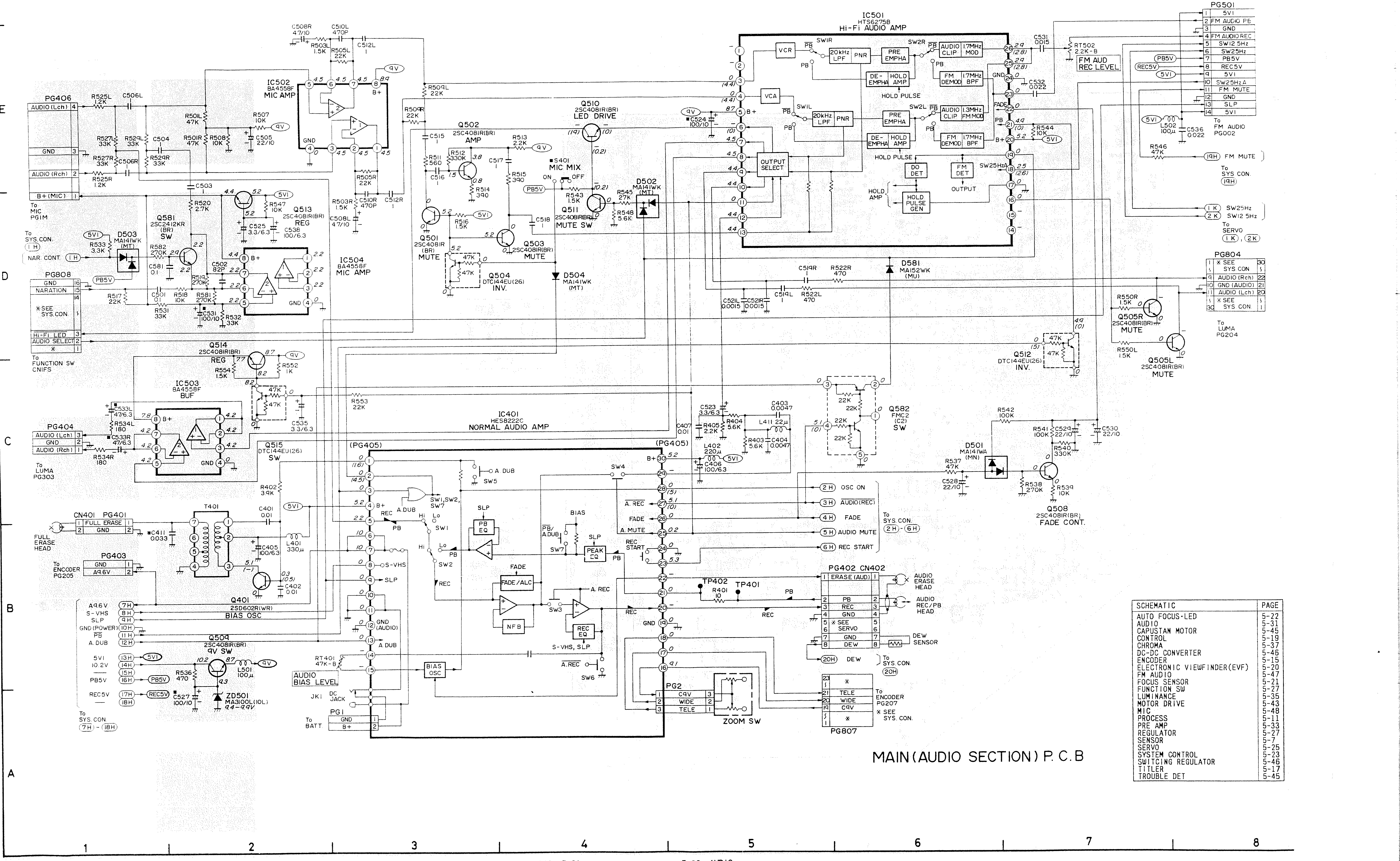
22-A TP601 2.5Vp-p
0.5V/10.0msec.cm
REC



22-B TP601 3.8Vp-p
1V/10.0msec.cm
PLAY



AIN (AUDIO SECTION) SCHEMATIC

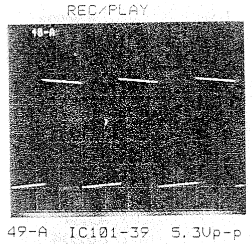

IC501 HTS6275B Hi-Fi AUDIO AMP
IC502 BA4558F MIC AMP
IC504 BA4558F MIC AMP
IC503 BA4558F BUF
IC401 HES8222C NORMAL AUDIO AMP
Q510 2SC4081R(BR) LED DRIVE
Q502 2SC4081R(BR) AMP
Q511 2SC4081R(BR) MUTE SW
Q501 2SC4081R (BR) MUTE
Q503 2SC4081R(BR) MUTE
Q504 DTC144EU(26) INV.
Q513 2SC4081R(BR) REG
Q581 2SC2412KR (BR) SW
Q514 2SC4081R(BR) REG
Q515 DTC144EU(26) SW
Q401 2SD602R(WR) BIAS OSC
Q509 2SC4081R(BR) 9V SW
Q512 DTC144EU(26) INV.
Q505R 2SC4081R(BR) MUTE
Q505L 2SC4081R(BR) MUTE
Q582 FMC2 (C2) SW
Q508 2SC4081R(BR) FADE CONT.
D502 MA141WK (MT)
D503 MA141WK (MT)
D504 MA141WK (MT)
D581 MA152WK (MU)
D501 MA141WA (MN)
ZD501 MA3100L(10L) 9.4-9.9V
RT502 2.2K-B FM AUD REC LEVEL
RT401 47K-B AUDIO BIAS LEVEL
S401 MIC MIX ON OFF
T401
PG406 AUDIO (Lch) GND AUDIO (Rch) B+(MIC) To MIC PG1M
PG808 GND NARATION ※SEE SYS.CON Hi-Fi LED AUDIO SELECT ※ To FUNCTION SW CNIFS
PG404 AUDIO (Lch) GND AUDIO (Rch) To LUMA PG303
CN401 PG401 FULL ERASE GND FULL ERASE HEAD
PG403 GND A9.6V To ENCODER PG205
A9.6V S-VHS SLP GND(POWER) PB A.DUB 5VI 10.2V PB5V REC5V To SYS.CON (7H)-(18H)
PG1 GND B+ To BATT
JK1 DC JACK
PG2 C9V WIDE TELE ZOOM SW
PG402 CN402 ERASE (AUD) PB REC GND ※SEE SERVO GND DEW AUDIO ERASE HEAD AUDIO REC/PB HEAD DEW SENSOR
PG807 ※ TELE WIDE C9V ※ To ENCODER PG207 ※SEE SYS.CON.
PG501 5VI FM AUDIO PB GND FM AUDIO REC SW12.5Hz SW25Hz PB5V REC5V 5VI SW25HzA FM MUTE GND SLP 5VI
To FM AUDIO PG002
FM MUTE To SYS CON. (19H)
SW25Hz SW12.5Hz To SERVO (1K),(2K)
PG804 ※SEE SYS CON AUDIO (Rch) GND (AUDIO) AUDIO (Lch) ※SEE SYS CON To LUMA PG204
OSC ON AUDIO(REC) FADE AUDIO MUTE REC START To SYS.CON. (2H)-(6H)
DEW To SYS.CON. (20H)
VCR 20kHz LPF PNR PRE EMPHA AUDIO CLIP 1.7MHz MOD DE-EMPHA HOLD AMP FM DEMOD 1.7MHz BPF
VCA 20kHz LPF PNR PRE EMPHA AUDIO CLIP 1.3MHz FM MOD DE-EMPHA HOLD AMP FM DEMOD 1.7MHz BPF
OUTPUT SELECT DO DET FM DET HOLD PULSE GEN HOLD AMP HOLD PULSE OUTPUT SW25HzA
SLP PB EQ PEAK EQ FADE FADE/ALC NFB REC EQ BIAS OSC SW1 SW2 SW3 SW4 SW5 SW6 SW7 A.DUB S-VHS SLP GND (AUDIO)
TP401 TP402
1 2 3 4 5 6 7 8
A B C D E

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

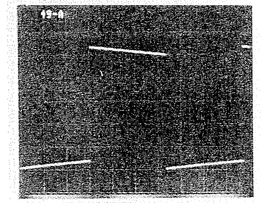
MAIN (AUDIO SECTION) P. C. B

PRE AMP SCHEMATIC

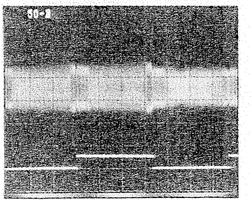
48-A IC101-37 4.8Vp-p
1V/10.0msec.cm
REC/PLAY

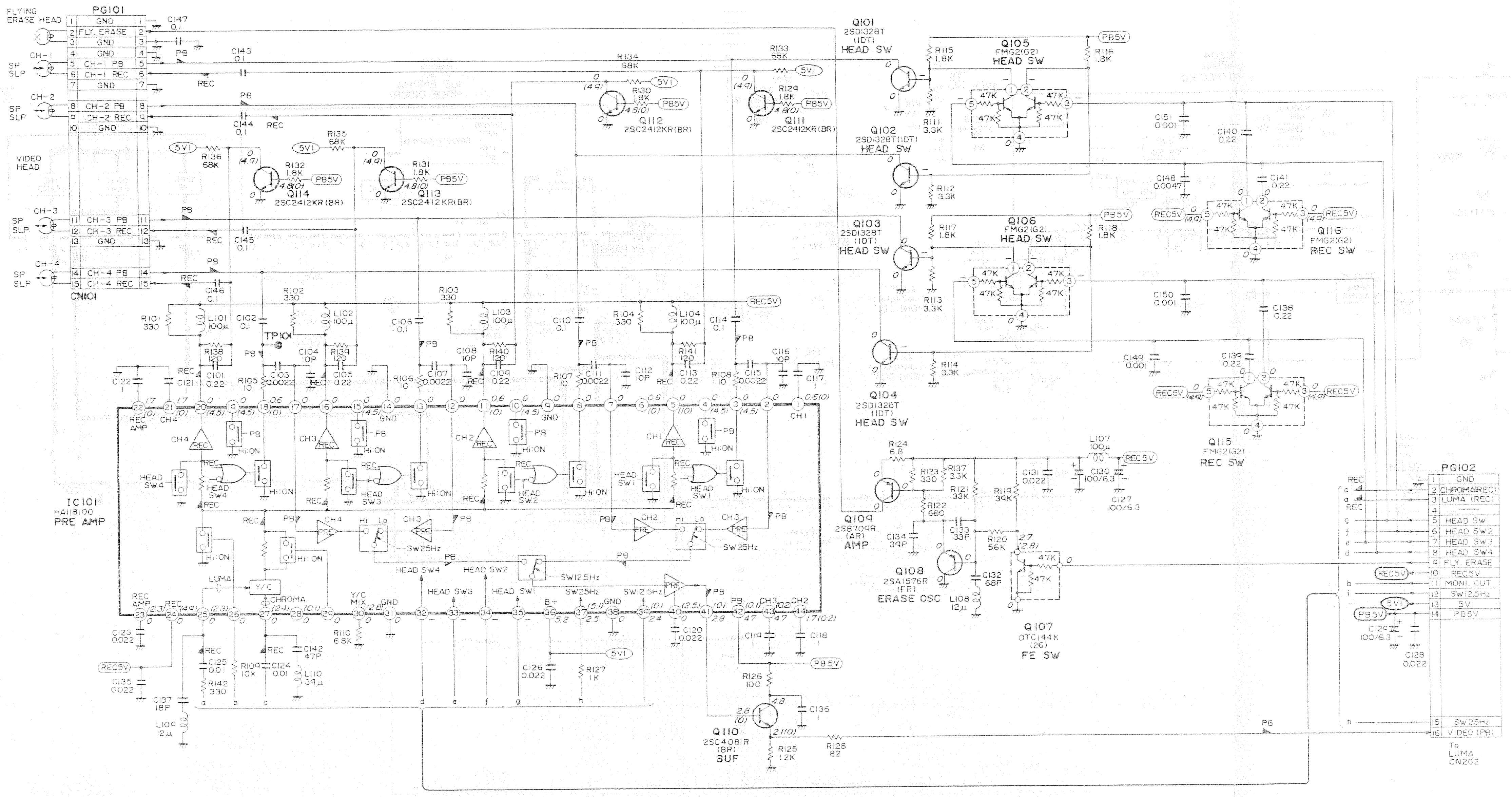


49-A IC101-39 5.3Vp-p
1V/10.0msec.cm
REC/PLAY



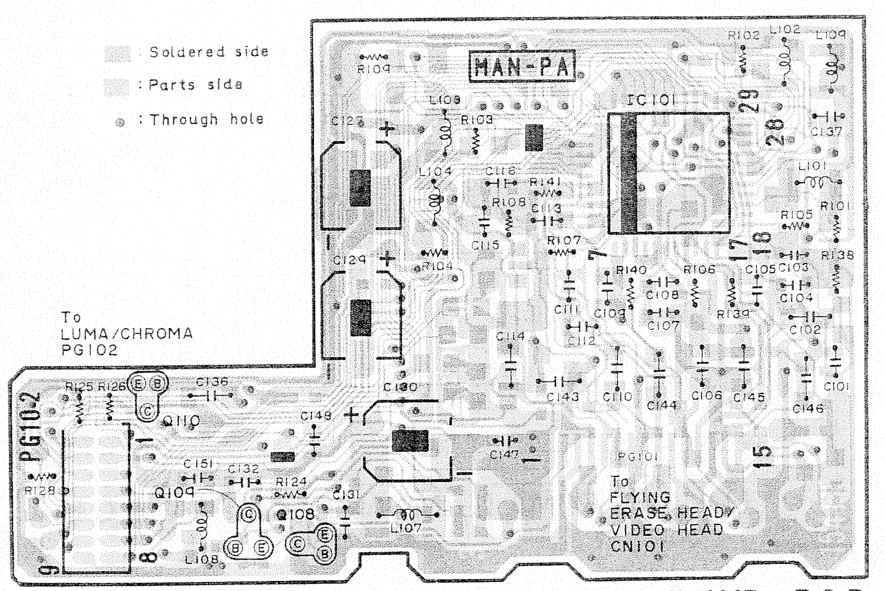
50-B IC101-41 590mVp-p
0.2V/5.0msec.cm
PLAY




FLYING ERASE HEAD
PG101
GND
FLY. ERASE
CH-1 PB
CH-1 REC
CH-2 PB
CH-2 REC
CH-3 PB
CH-3 REC
CH-4 PB
CH-4 REC
CN101
VIDEO HEAD
CH-1
CH-2
CH-3
CH-4
SP
SLP
C147 0.1
C143 0.1
C144 0.1
C145 0.1
C146 0.1
R134 68K
R133 68K
R135 68K
R136 68K
R130 1.8K
R129 1.8K
R132 1.8K
R131 1.8K
Q112 2SC2412KR(BR)
Q111 2SC2412KR(BR)
Q114 2SC2412KR(BR)
Q113 2SC2412KR(BR)
5V1
PB5V
REC5V
Q101 2SD1328T (IDT) HEAD SW
Q102 2SD1328T (IDT) HEAD SW
Q103 2SD1328T (IDT) HEAD SW
Q104 2SD1328T (IDT) HEAD SW
Q105 FMG2(G2) HEAD SW
Q106 FMG2(G2) HEAD SW
Q116 FMG2(G2) REC SW
Q115 FMG2(G2) REC SW
R115 1.8K
R116 1.8K
R117 1.8K
R118 1.8K
R111 3.3K
R112 3.3K
R113 3.3K
R114 3.3K
47K
C151 0.001
C140 0.22
C148 0.0047
C141 0.22
C150 0.001
C138 0.22
C149 0.001
C139 0.22
R101 330
R102 330
R103 330
R104 330
L101 100µ
L102 100µ
L103 100µ
L104 100µ
C102 0.1
C106 0.1
C110 0.1
C114 0.1
TP101
C122
C121
C101 0.22
C105 0.22
C109 0.22
C113 0.22
C103 0.0022
C107 0.0022
C111 0.0022
C115 0.0022
C104 10P
C108 10P
C112 10P
C116 10P
C117
R105 10
R106 10
R107 10
R108 10
R138 120
R139 120
R140 120
R141 120
IC101 HA118100 PRE AMP
REC AMP
CH1
CH2
CH3
CH4
REC
PB
Hi ON
HEAD SW1
HEAD SW2
HEAD SW3
HEAD SW4
SW25Hz
SW12.5Hz
Y/C
LUMA
CHROMA
Y/C MIX
GND
B+
C123 0.022
C125 0.01
R142 330
C135 0.022
C137 18P
L109 12µ
R104 10K
C124 0.01
C142 47P
L110 39µ
R110 6.8K
C126 0.022
R127 1K
C120 0.022
C119
C118
R126 100
C136
Q110 2SC4081R (BR) BUF
R125 1.2K
R128 82
R124 6.8
R123 330
R137 3.3K
R121 33K
R119 39K
C131 0.022
L107 100µ
C130 100/6.3
C127 100/6.3
R122 680
Q109 2SB709R (AR) AMP
C134 39P
C133 33P
R120 56K
Q108 2SA1576R (FR) ERASE OSC
C132 68P
L108 12µ
Q107 DTC144K (26) FE SW
C129 100/6.3
C128 0.022
PG102
GND
CHROMA(REC)
LUMA (REC)
HEAD SW1
HEAD SW2
HEAD SW3
HEAD SW4
FLY. ERASE
REC5V
MONI. CUT
SW12.5Hz
5V1
PB5V
SW25Hz
VIDEO (PB)
To LUMA CN202

PRE AMP CIRCUIT BOARD

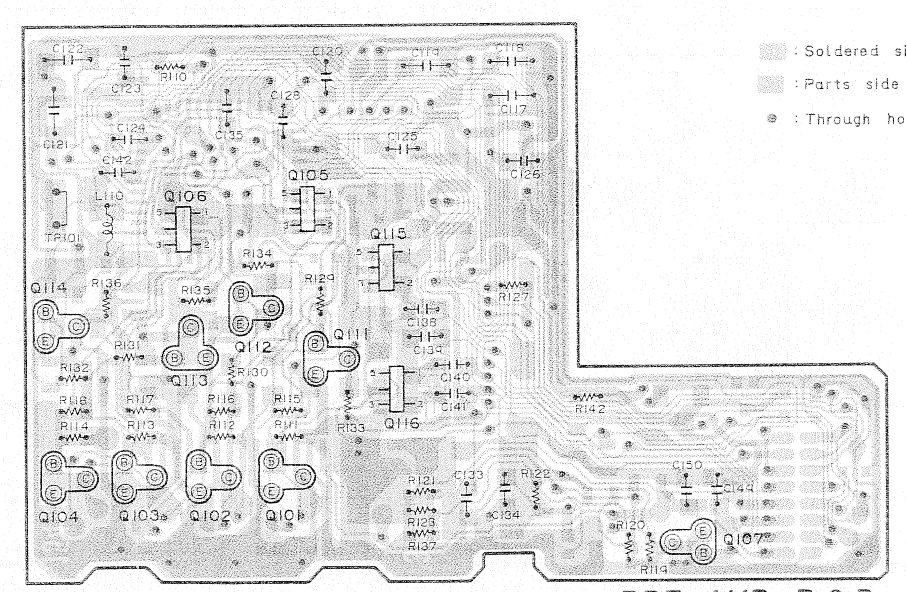
▨ : Soldered side
▨ : Parts side
◎ : Through hole


To LUMA/CHROMA PG102
MAN-PA
IC101
PG102
PG101
To FLYING ERASE HEAD/ VIDEO HEAD CN101
Q110
Q109
Q108
L107
L108
R125
R126
R128
C136
C149
C151
C132
R124
C131
C127
C129
C130
C147
R102
L102
L103
L104
L101
R103
R109
C122
C123
C116
R141
R108
C113
R107
R104
R140
R106
R139
C111
C103
C108
C107
C105
C104
C102
C114
C112
C143
C110
C144
C106
C145
C146
C101
C137
R101
R105
R138
29
28
17
18
7
15
1
8
9

PRE AMP P.C.B
(COMPONENT SIDE)

PRE AMP P.C.B

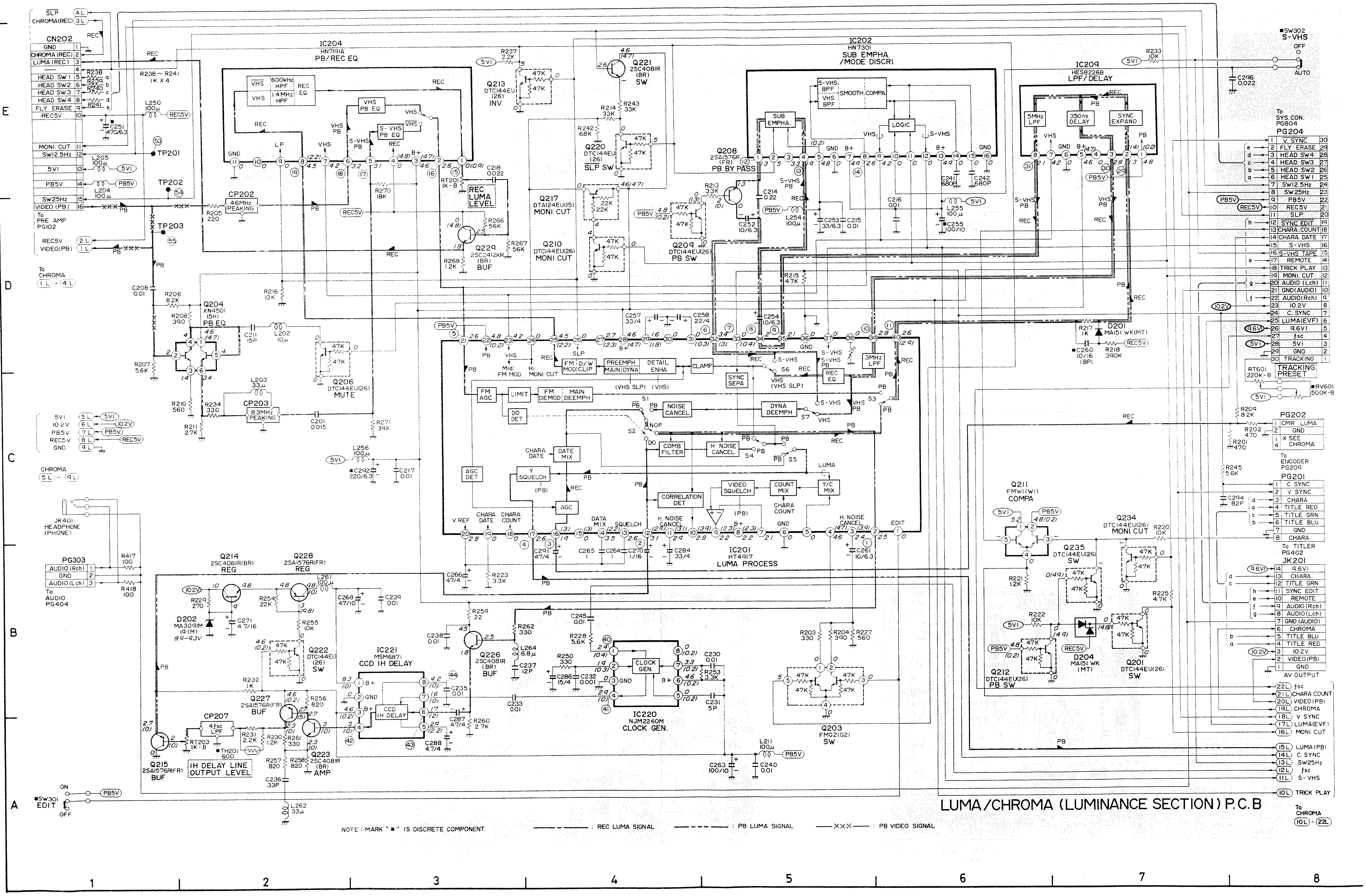
▨ : Soldered side
▨ : Parts side
◎ : Through hole


C122
C120
C118
C123
R110
C128
C117
C124
C142
C135
C125
C126
C121
L110
Q105
Q106
Q115
TP101
R134
R135
R129
Q114
R136
Q113
Q112
Q111
R131
R130
R132
R127
C138
C139
C140
C141
Q116
R118
R117
R116
R115
R114
R113
R112
R111
R133
R142
R121
R122
R123
R137
C133
C134
C150
C148
R120
R119
Q107
Q104
Q103
Q102
Q101

PRE AMP P.C.B
(SOLDER SIDE)

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

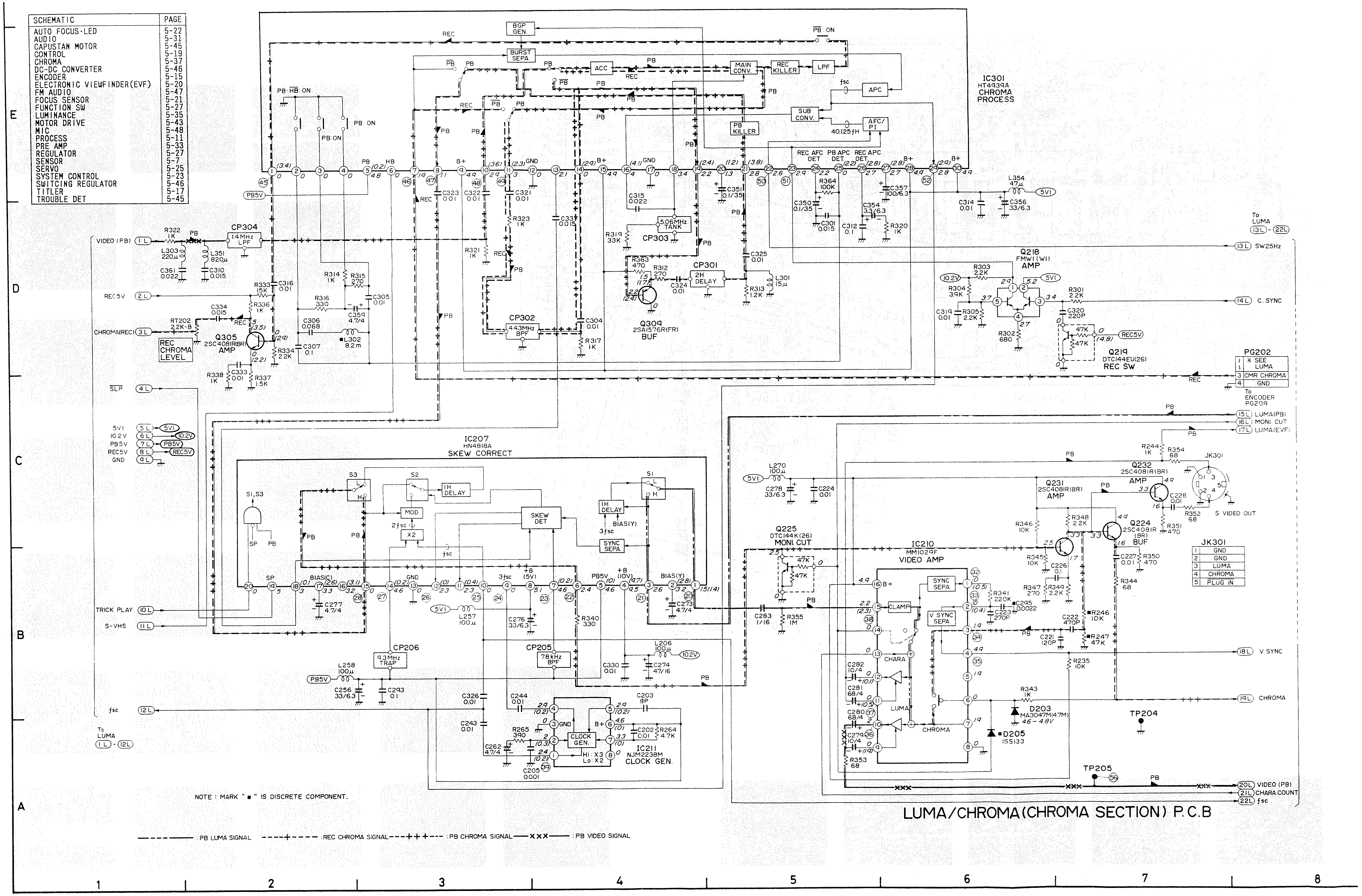
LUMINANCE/CHROMA (LUMINANCE SECTIUON) SCHEMATIC


CN202
GND
CHROMA (REC)
LUMA (REC)
HEAD SW1
HEAD SW2
HEAD SW3
HEAD SW4
FLY ERASE
REC5V
MONI. CUT
SW12.5Hz
5V1
PB5V
SW25Hz
VIDEO (PB)
To PRE AMP PG102
To CHROMA (1L) - (4L)
IC204 HN7191A PB/REC EQ
600kHz HPF
1.4MHz HPF
REC EQ
VHS PB EQ
S-VHS PB EQ
CP202 4.6MHz PEAKING
Q204 XN4501 (5H) PB EQ
CP203 8.3MHz PEAKING
Q206 DTC144EU(26) MUTE
Q213 DTC144EU (26) INV.
Q221 2SC4081R (BR) SW
Q220 DTC144EU (26) SLP SW
Q217 DTA124EU(15) MONI. CUT
Q210 DTC144EU(26) MONI. CUT
Q229 2SC2412KR (BR) BUF
REC LUMA LEVEL
RT201 1K-B
IC202 HN7301 SUB EMPHA. /MODE DISCRI.
SUB EMPHA.
S-VHS BPF
VHS BPF
SMOOTH
COMPA.
LOGIC
Q208 2SA1576R (FR) PB BY PASS
Q209 DTC144EU(26) PB SW
IC209 HE8226B LPF/DELAY
5MHz LPF
350ns DELAY
SYNC EXPAND
D201 MA151 WK(MT)
SW302 S-VHS OFF AUTO
To SYS. CON. PG804
PG204
V. SYNC
FLY ERASE
HEAD SW4
HEAD SW3
HEAD SW2
HEAD SW1
SW12.5Hz
SW25Hz
PB5V
REC5V
SLP
SYNC EDIT
CHARA. COUNT
CHARA. DATE
S-VHS
S-VHS TAPE
REMOTE
TRICK PLAY
MONI. CUT
AUDIO (Lch)
GND(AUDIO)
AUDIO(Rch)
10.2V
C. SYNC
LUMA(EVF)
9.6V1
fsc
5V1
GND
TRACKING
RT601 220K-B TRACKING PRESET
RV601 500K-B
IC201 HT4917 LUMA PROCESS
FM MOD
D/W CLIP
PREEMPH MAIN DYNA
DETAIL ENHA
CLAMP
SYNC SEPA
REC EQ
3MHz LPF
FM AGC
LIMIT
FM DEMOD
MAIN DEEMPH
DO DET
NOISE CANCEL
DYNA DEEMPH
COMB FILTER
H NOISE CANCEL
DATE MIX
Y SQUELCH
AGC DET
AGC
CORRELATION DET
VIDEO SQUELCH
COUNT MIX
Y/C MIX
PG202
CMR LUMA
GND
X SEE CHROMA
To ENCODER PG209
PG201
C SYNC
V SYNC
CHARA
TITLE RED
TITLE GRN
TITLE BLU
GND
CHARA.
To TITLER PG402
JK201
9.6V
CHARA.
TITLE GRN
SYNC EDIT
REMOTE
AUDIO (Rch)
AUDIO (Lch)
GND (AUDIO)
CHROMA
TITLE BLU
TITLE RED
10.2V
VIDEO (PB)
GND
AV OUTPUT
Q211 FMW1(W1) COMPA
Q234 DTC144EU(26) MONI. CUT
Q235 DTC144EU(26) SW
Q212 DTC144EU(26) PB SW
D204 MA151 WK (MT)
Q201 DTC144EU(26) SW
Q203 FMG2(G2) SW
fsc
CHARA. COUNT
VIDEO (PB)
CHROMA
V. SYNC
LUMA(EVF)
MONI. CUT
LUMA (PB)
C SYNC
SW25Hz
fsc
S-VHS
TRICK PLAY
To CHROMA (10L) - (22L)
LUMA/CHROMA (LUMINANCE SECTION) P.C.B
JK401 HEADPHONE (PHONE)
PG303
AUDIO (Rch)
GND
AUDIO (Lch)
To AUDIO PG404
Q214 2SC4081R(BR) REG
Q228 2SA1576R(FR) REG
D202 MA3091M (9.1M)
Q222 DTC144EU (26) SW
Q227 2SA1576R(FR) BUF
Q223 2SC4081R (BR) AMP
Q215 2SA1576R(FR) BUF
CP207 4fsc LPF
RT203 1K-B
IH DELAY LINE OUTPUT LEVEL
IC221 MSM6871 CCD 1H DELAY
Q226 2SC4081R (BR) BUF
IC220 NJM2240M CLOCK GEN.
SW301 EDIT ON OFF
A B C D E
1 2 3 4 5 6 7 8
REC LUMA SIGNAL
PB LUMA SIGNAL
PB VIDEO SIGNAL

NOTE : MARK "■" IS DISCRETE COMPONENT.

LUMINANCE/CHROMA (CHROMA SECTIUON) SCHEMATIC

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45



E
D
C
B
A
1
2
3
4
5
6
7
8
IC301
HT4939A
CHROMA
PROCESS
BGP GEN.
BURST SEPA
ACC
MAIN CONV.
REC KILLER
LPF
APC
SUB CONV.
AFC/PI
PB KILLER
PB ON
PB·HB ON
PB ON
REC AFC DET
PB APC DET
REC APC DET
40.125fH
fsc
VIDEO (PB) 1L
REC5V 2L
CHROMA(REC) 3L
SLP 4L
5V1 5L
10.2V 6L
PB5V 7L
REC5V 8L
GND 9L
TRICK PLAY 10L
S-VHS 11L
fsc 12L
To LUMA 1L - 12L
CP304 1.4MHz LPF
R322 1K
L303 220μ
L351 820μ
C361 0.022
C310 0.015
REC CHROMA LEVEL
RT202 2.2K-B
Q305 2SC408IR(BR) AMP
R333 15K
R336 1K
C334 0.015
C316 0.01
R314 1K
R315 270
R316 330
C305 0.01
C306 0.068
C359 4.7/4
C307 0.1
L302 8.2m
R334 2.2K
R338 1K
C333 0.01
R337 1.5K
C323 0.01
C322 0.01
C321 0.01
R323 1K
C337 0.015
R321 1K
CP302 4.43MHz BPF
C304 0.01
R317 1K
C315 0.022
CP303 5.06MHz TANK
R319 33K
R363 470
R312 270
C324 0.01
CP301 2H DELAY
Q309 2SA1576R(FR) BUF
R313 1.2K
L301 15μ
C325 0.01
C351 0.1/35
R364 100K
C350 0.1/35
C301 0.015
C312 0.1
C354 33/6.3
R320 1K
C357 100/6.3
C314 0.01
C356 33/6.3
L354 47μ
5V1
To LUMA 13L - 22L
13L SW25Hz
14L C.SYNC
Q218 FMW1(W1) AMP
R303 2.2K
R304 39K
R305 2.2K
C319 0.01
R302 680
R301 2.2K
C320 220P
Q219 DTC144EU(26) REC SW
REC5V
PG202
1 X SEE LUMA
3 CMR CHROMA
4 GND
To ENCODER PG209
15L LUMA(PB)
16L MONI CUT
17L LUMA(EVF)
IC207
HN4818A
SKEW CORRECT
S1,S3
S3
S2
S1
1H DELAY
MOD
2fsc
X2
SKEW DET
SYNC SEPA
BIAS(Y)
BIAS(C)
3fsc
C277 4.7/4
L257 100μ
C276 33/6.3
R340 330
C273 4.7/4
CP206 9.3MHz TRAP
CP205 7.8kHz BPF
L258 100μ
PB5V
C256 33/6.3
C243 0.1
C326 0.01
C243 0.01
C244 0.01
L206 100μ
C274 47/16
C330 0.01
10.2V
R265 390
C262 47/4
C205 0.001
CLOCK GEN.
Hi : X3
Lo : X2
IC211
NJM2238M
CLOCK GEN.
C203 5P
C202 0.01
R264 4.7K
L270 100μ
C278 33/6.3
C224 0.01
Q225 DTC144K(26) MONI CUT
C283 1/16
R355 1M
IC210
MM1029F
VIDEO AMP
SYNC SEPA
CLAMP
V.SYNC SEPA
CHARA
LUMA
CHROMA
R341 220K
C223 270P
C295 0.0022
C282 10/4
C281 68/4
C280 68/4
C279 10/4
R353 68
R343 1K
D203 MA3047M(47M)
D205 1SS133
Q231 2SC408IR(BR) AMP
Q232 2SC408IR(BR) AMP
Q224 2SC408IR (BR) BUF
R244 1K
R354 68
R346 10K
R348 2.2K
R345 10K
C226 0.1
R347 270
R349 2.2K
C222 470P
C221 120P
R246 10K
R247 47K
R235 10K
C227 0.01
R350 470
R344 68
C228 0.01
R352 68
R351 470
JK301
S VIDEO OUT
18L V.SYNC
19L CHROMA
TP204
TP205
20L VIDEO (PB)
21L CHARA.COUNT
22L fsc

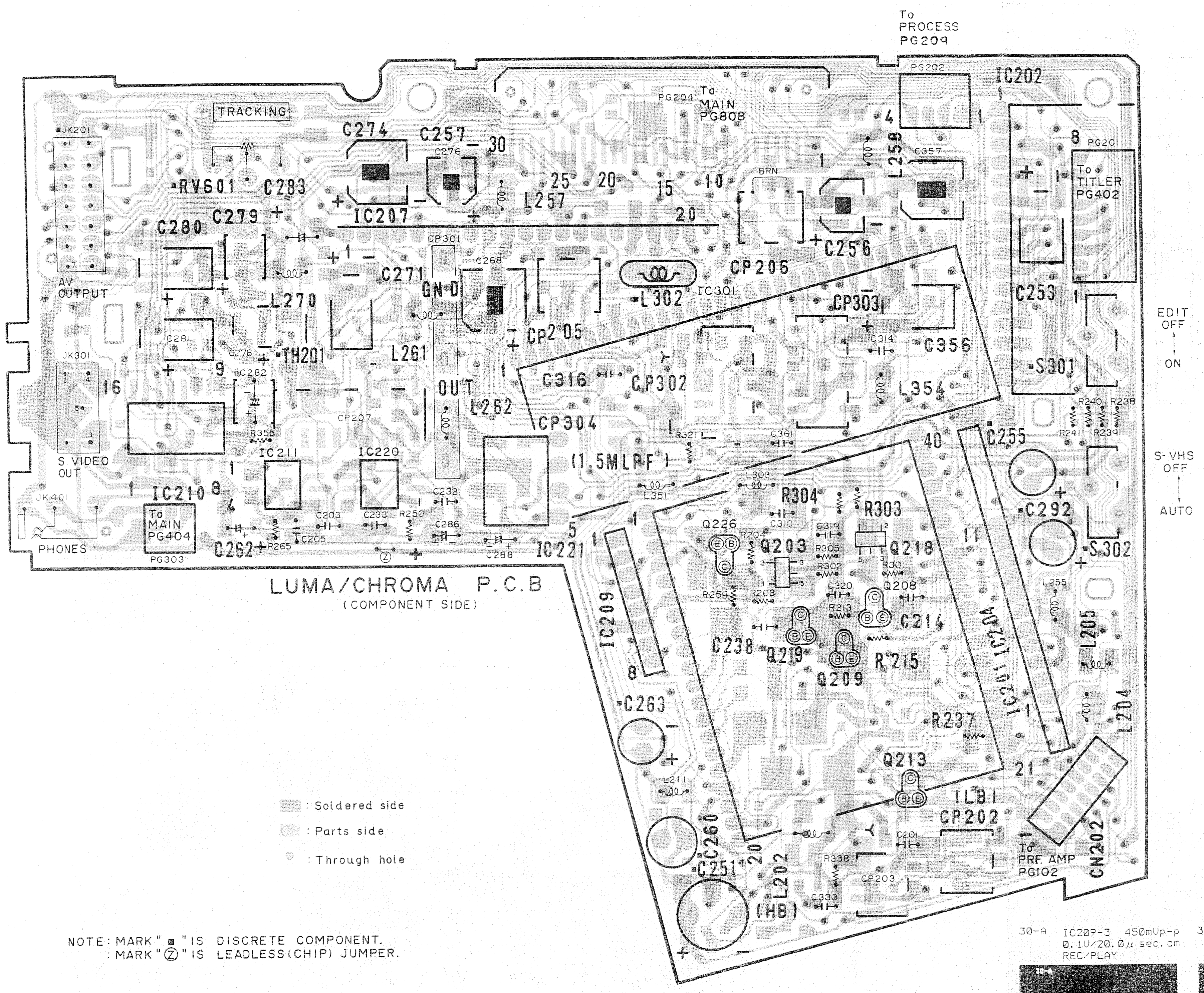
JK301	
1	GND
2	GND
3	LUMA
4	CHROMA
5	PLUG IN

LUMA/CHROMA(CHROMA SECTION) P.C.B

NOTE : MARK " ■ " IS DISCRETE COMPONENT.

——— : PB LUMA SIGNAL ——+—— : REC CHROMA SIGNAL ——++++—— : PB CHROMA SIGNAL ——XXX—— : PB VIDEO SIGNAL

UMINANCE/CHROMA CIRCUIT BOARD —COMPONENT SIDE—


To PROCESS PG209
PG202
IC202
PG204
To MAIN PG808
TRACKING
JK201
RV601
C283
C274
C257
C276
IC207
L257
L259
C357
PG201
To TITLER PG402
C279
C280
CP301
C268
BRN
CP206
C256
C271
GND
L302
IC301
CP303
C253
AV OUTPUT
L270
C281
C278
TH201
C282
L261
CP205
C314
C356
C316
CP302
L354
S301
JK301
OUT
L262
CP304
R355
CP207
(1.5MLPF)
R321
C361
C255
R240
R238
R241
R239
S VIDEO OUT
IC211
IC220
C232
L303
L351
R304
R303
C292
IC210
JK401
To MAIN PG404
PHONES
PG303
C262
R265
C203
C205
C233
R250
C286
C288
IC221
Q226
R204
C310
Q203
C319
Q218
S302
R305
R302
R301
R259
R203
C320
Q208
L255
IC209
R213
C214
IC204
IC201
L205
C238
Q219
R215
Q209
C263
R237
L204
L211
Q213
(LB)
CP202
C260
C201
CN202
C251
L202
R338
CP203
To PRE AMP PG102
(HB)
C333
EDIT OFF ON
S-VHS OFF AUTO

LUMA/CHROMA P.C.B
(COMPONENT SIDE)

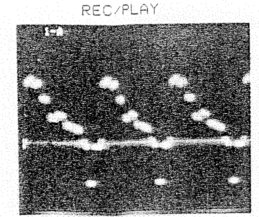
▨ : Soldered side

▨ : Parts side

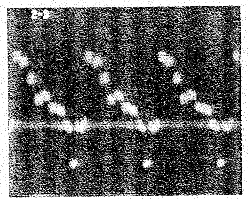
● : Through hole

NOTE: MARK "■" IS DISCRETE COMPONENT.
: MARK "Ⓩ" IS LEADLESS(CHIP) JUMPER.

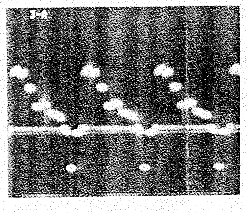
1-A IC201-2 500mVp-p 0.1V/20.0µ sec.cm REC/PLAY



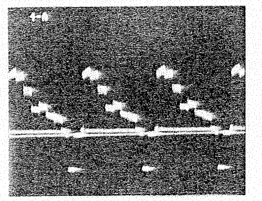
2-B IC201-12 540mVp-p 0.1V/20.0µ sec.cm PLAY



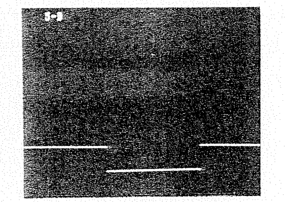
3-A IC201-16 450mVp-p 0.1V/20.0µ sec.cm REC



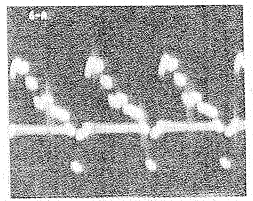
4-A IC201-17 890mVp-p 0.2V/20.0µ sec.cm REC/PLAY



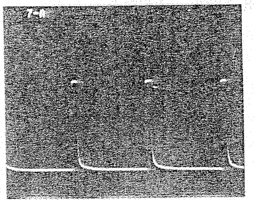
5-B IC201-21 87mVp-p 50mV/5.0msec.cm PLAY



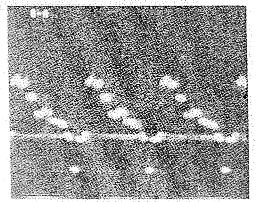
6-A IC201-32 500mVp-p 0.1V/20.0µ sec.cm REC/PLAY



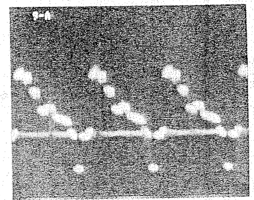
7-A IC201-33 3.9Vp-p 1V/20.0µ sec.cm REC/PLAY



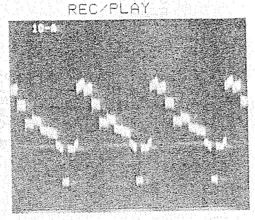
8-A IC201-34 410mVp-p 0.1V/20.0µ sec.cm REC/PLAY



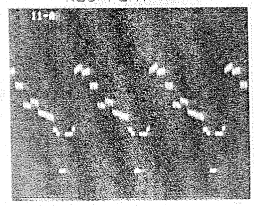
9-A IC201-35 450mVp-p 0.1V/20.0µ sec.cm REC/PLAY



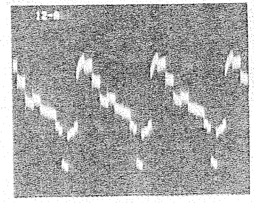
10-A IC201-39 450mVp-p 0.1V/20.0µ sec.cm REC/PLAY



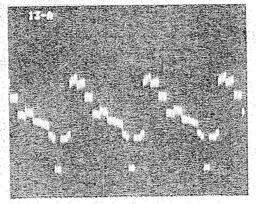
11-A IC201-40 950mVp-p 0.2V/20.0µ sec.cm REC/PLAY



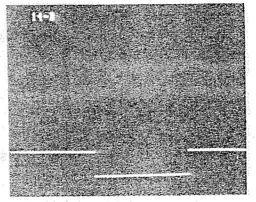
12-A IC202-1 520mVp-p 0.1V/20.0µ sec.cm REC/PLAY



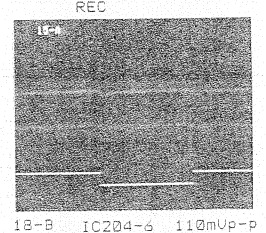
13-A IC202-4 420mVp-p 0.1V/20.0µ sec.cm REC/PLAY



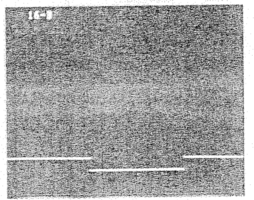
14-B IC202-8 110mVp-p 50mV/5.0msec.cm PLAY



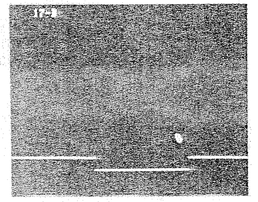
15-A IC204-1 260mVp-p 0.1V/5.0msec.cm REC



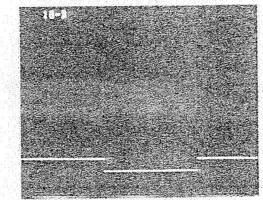
16-B IC204-2 110mVp-p 50mV/5.0msec.cm PLAY



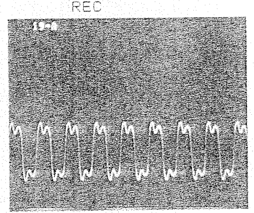
17-B IC204-5 130mVp-p 50mV/5.0msec.cm PLAY



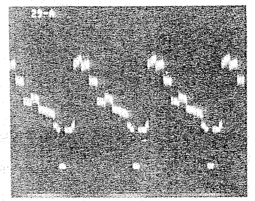
18-B IC204-6 110mVp-p 50mV/5.0msec.cm PLAY



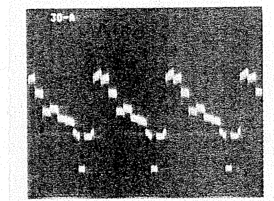
19-A IC204-8 1.3Vp-p 0.5V/100nsec.cm REC



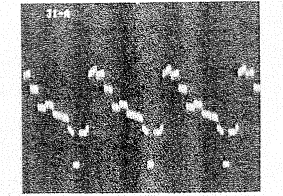
29-A IC209-2 500mVp-p 0.1V/20.0µ sec.cm REC/PLAY



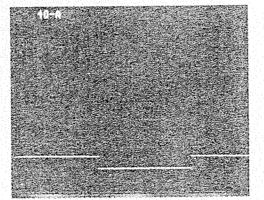
30-A IC209-3 450mVp-p 0.1V/20.0µ sec.cm REC/PLAY



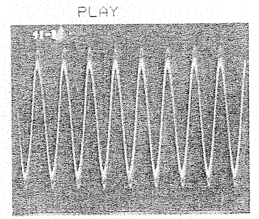
31-A IC209-8 450mVp-p 0.1V/20.0µ sec.cm REC/PLAY



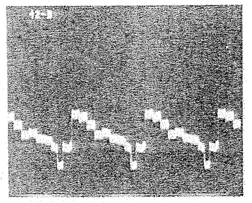
40-A IC220-1 120mVp-p 50mV/5.0msec.cm REC/PLAY



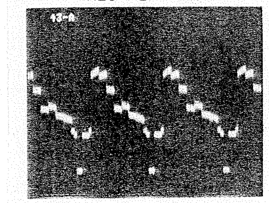
41-B IC220-4 610mVp-p 0.1V/50.0nsec.cm PLAY



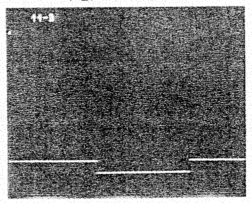
42-B IC221-4 1.3Vp-p 0.5V/20.0µ sec.cm PLAY



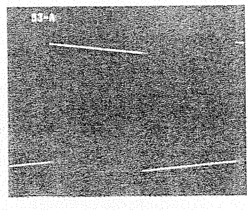
43-A IC221-6 460mVp-p 0.1V/20.0µ sec.cm REC/PLAY



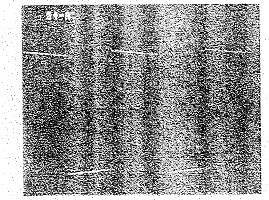
44-B IC221-7 150mVp-p 50mV/5.0msec.cm PLAY



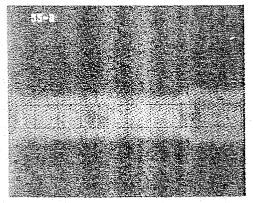
53-A TP201 5.6Vp-p 1V/10.0msec.cm REC/PLAY



54-A TP202 5.0Vp-p 1V/10.0msec.cm REC/PLAY



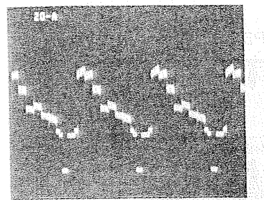
55-B TP203 130mVp-p 50mV/5.0msec.cm PLAY

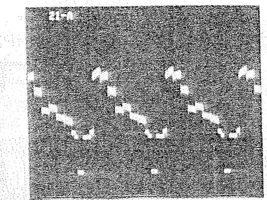


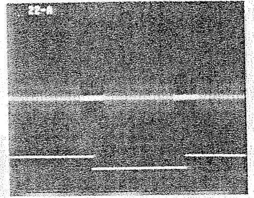
D
C
B
A

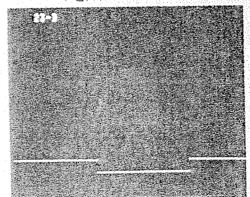
1 2 3 4 5 6 7 8

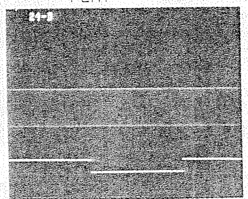
LUMINANCE/CHROMA CIRCUIT BOARD — SOLDER SIDE —

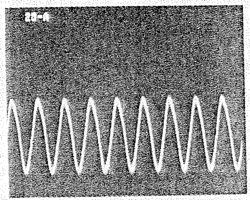

20-A IC207-1 940mVp-p
0.2V/20.0μ sec.cm
REC/PLAY

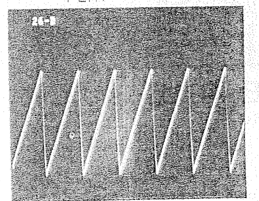

21-A IC207-3 900mVp-p
0.2V/20.0μ sec.cm
REC/PLAY

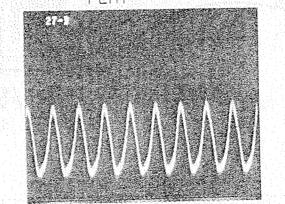

22-A IC207-6 410mVp-p
0.2V/5.0msec.cm
REC/PLAY

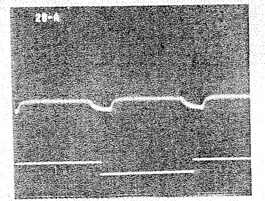

23-B IC207-7 210mVp-p
0.1V/5.0msec.cm
PLAY

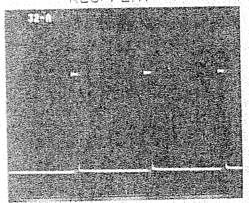

24-B IC207-9 870mVp-p
0.5V/5.0msec.cm
PLAY

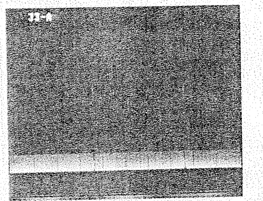

25-A IC207-10 320mVp-p
0.1V/200nsec.cm
REC/PLAY

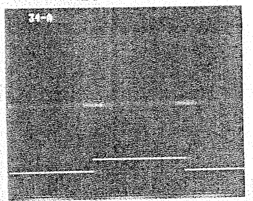

26-B IC207-12 2.3Vp-p
0.5V/20.0μ sec.cm
PLAY

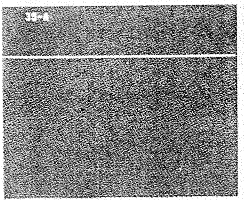

27-B IC207-14 160mVp-p
50mV/200nsec.cm
PLAY

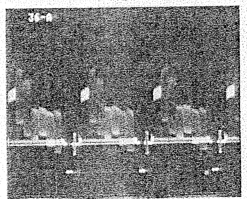

28-A IC207-15 450mVp-p
0.2V/5.0msec.cm
REC/PLAY

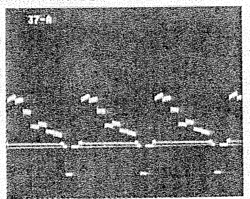

32-A IC210-1 4.4Vp-p
1V/20.0μ sec.cm
REC/PLAY

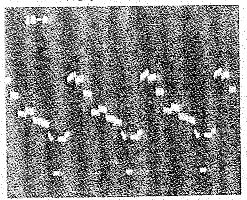

33-A IC210-2 3.9Vp-p
1V/5.0msec.cm
REC/PLAY

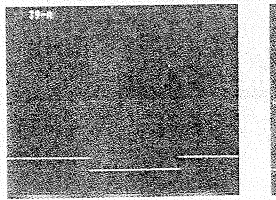

34-A IC210-3 210mVp-p
0.1V/5.0msec.cm
REC/PLAY

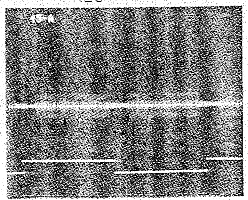

35-A IC210-4 5.0Vp-p
1V/5.0msec.cm
REC/PLAY

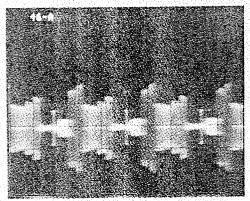

36-A IC210-10 2.4Vp-p
0.5V/20.0μ sec.cm
REC/PLAY

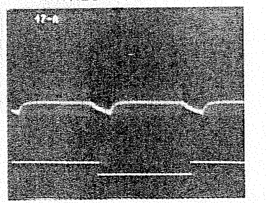

37-A IC210-11 1.8Vp-p
0.5V/20.0μ sec.cm
REC/PLAY

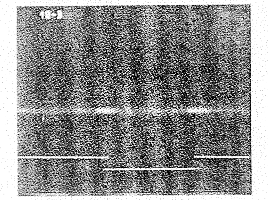

38-A IC210-15 900mVp-p
0.2V/20.0μ sec.cm
REC/PLAY

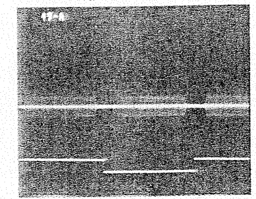

39-A IC211-1 300mVp-p
0.1V/5.0msec.cm
REC/PLAY

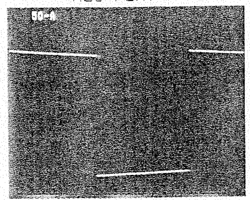

45-A IC301-1 410mVp-p
0.2V/5.0msec.cm
REC

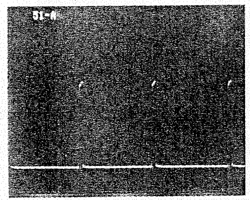

46-A IC301-7 780mVp-p
0.2V/20.0μ sec.cm
REC

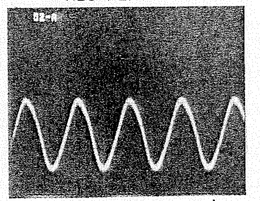

47-A IC301-8 430mVp-p
0.2V/5.0msec.cm
REC/PLAY

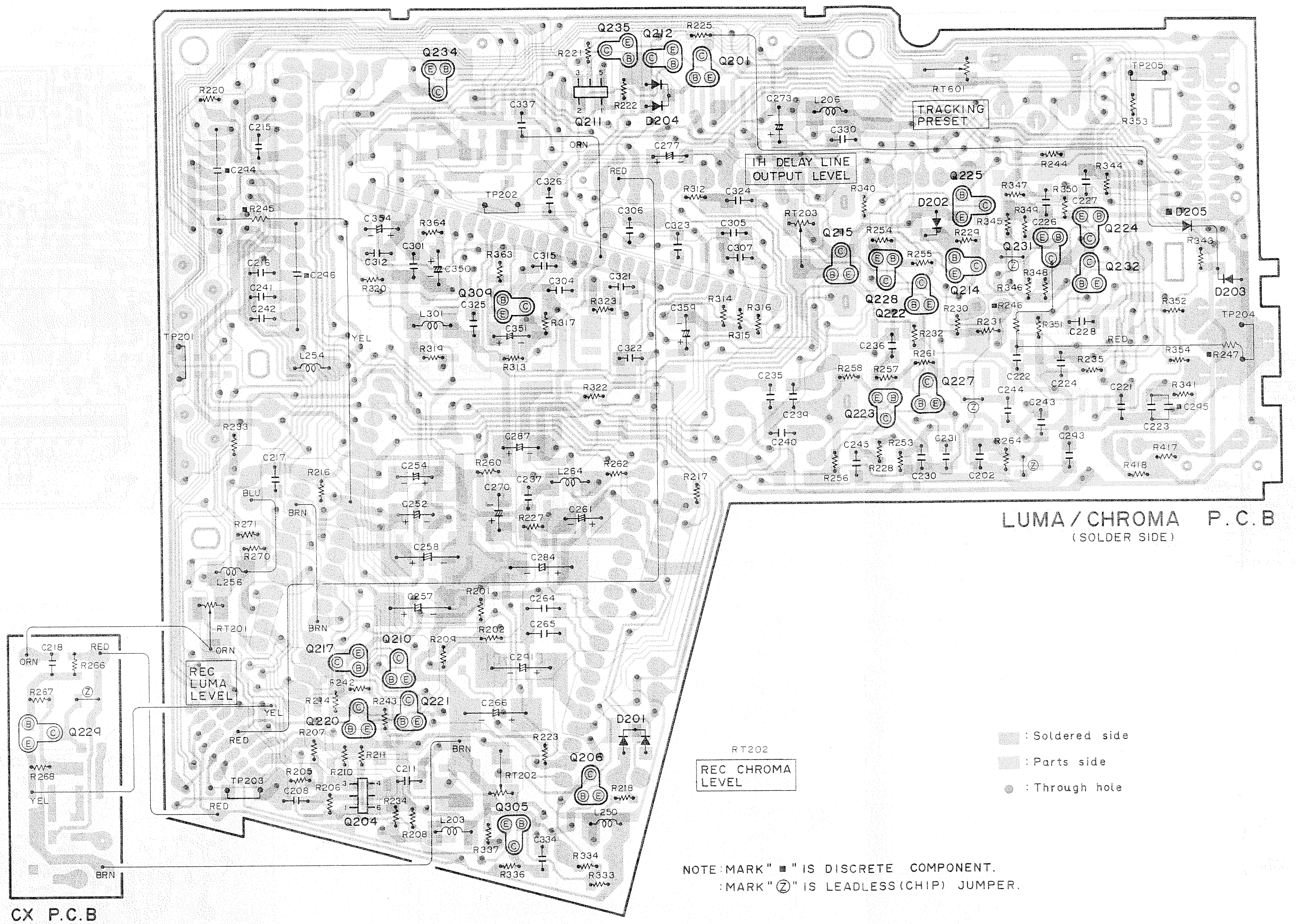

48-B IC301-10 54mVp-p
50mV/5.0msec.cm
PLAY


49-A IC301-11 810mVp-p
0.5V/5.0msec.cm
REC/PLAY


50-A IC301-22 5.0Vp-p
1V/5.0msec.cm
REC/PLAY

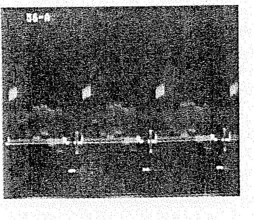

51-A IC301-23 7.8Vp-p
2V/20.0μ sec.cm
REC/PLAY


52-A IC301-29 320mVp-p
0.1V/100nsec.cm
REC/PLAY

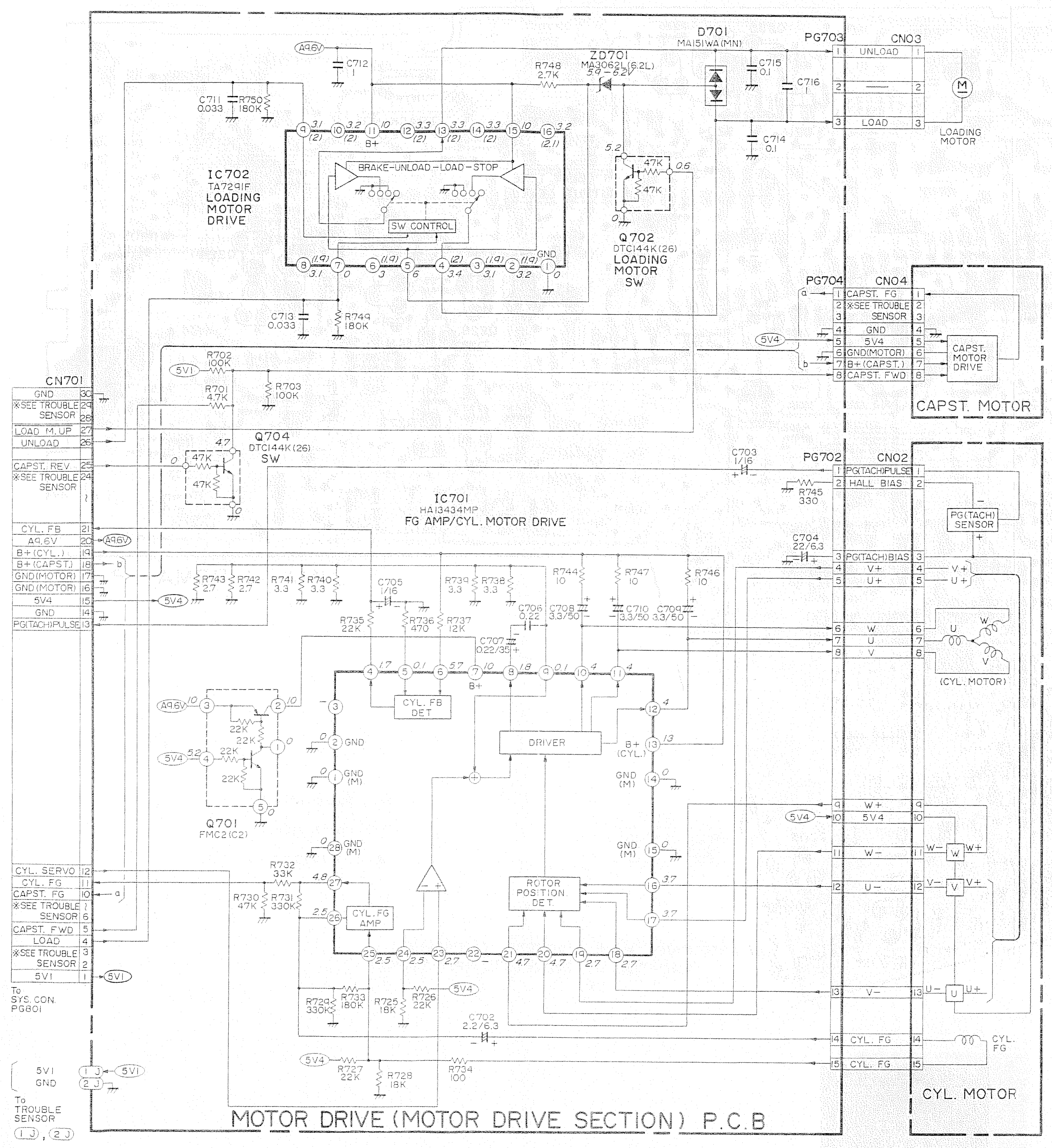

LUMA/CHROMA P.C.B
(SOLDER SIDE)
CX P.C.B
TRACKING PRESET
RT601
1H DELAY LINE OUTPUT LEVEL
RT203
REC LUMA LEVEL
RT201
RT202
REC CHROMA LEVEL
TP201
TP202
TP203
TP204
TP205
Q201
Q204
Q206
Q210
Q211
Q212
Q214
Q215
Q217
Q220
Q221
Q222
Q223
Q224
Q225
Q227
Q228
Q229
Q231
Q232
Q234
Q235
Q305
Q309
D201
D202
D203
D204
D205
L203
L206
L250
L254
L256
L264
L301
ORN
RED
YEL
BLU
BRN

▨ : Soldered side
▨ : Parts side
● : Through hole

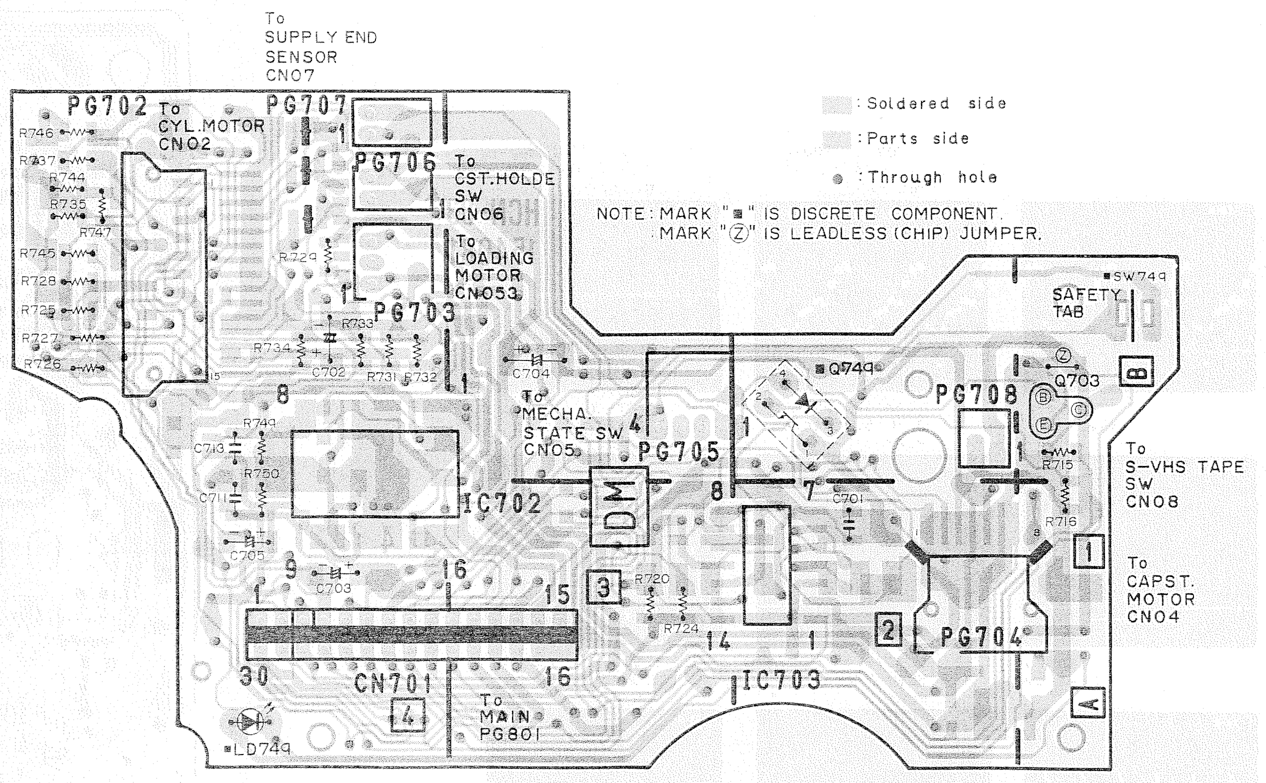
NOTE: MARK " ■ " IS DISCRETE COMPONENT.
: MARK " Ⓩ " IS LEADLESS (CHIP) JUMPER.


56-A TP205 2.4Vp-p
0.5V/20.0μ sec.cm
REC/PLAY

MOTOR DRIVE (MOTOR DRIVE SECTION) SCHEMATIC


D701
MA151WA(MN)
ZD701
MA3062L(6.2L)
5.9~6.2V
PG703
CN03
UNLOAD
LOAD
LOADING MOTOR
C712
C711 0.033
R750 180K
R748 2.7K
C715 0.1
C716 1
C714 0.1
IC702
TA7291F
LOADING MOTOR DRIVE
BRAKE-UNLOAD-LOAD-STOP
SW CONTROL
Q702
DTC144K(26)
LOADING MOTOR SW
47K
C713 0.033
R749 180K
PG704
CN04
CAPST. FG
※SEE TROUBLE SENSOR
GND
5V4
GND(MOTOR)
B+(CAPST.)
CAPST. FWD
CAPST. MOTOR DRIVE
CAPST. MOTOR
R702 100K
R701 4.7K
R703 100K
Q704
DTC144K(26)
SW
CN701
GND
LOAD M. UP
UNLOAD
CAPST. REV.
CYL. FB
A9.6V
B+(CYL.)
B+(CAPST.)
GND(MOTOR)
5V4
GND
PG(TACHI)PULSE
C703 1/16
PG702
CN02
PG(TACHI)PULSE
HALL BIAS
R745 330
PG(TACHI) SENSOR
IC701
HA13434MP
FG AMP/CYL. MOTOR DRIVE
C704 22/6.3
PG(TACHI)BIAS
V+
U+
W
U
V
(CYL. MOTOR)
R743 2.7
R742 2.7
R741 3.3
R740 3.3
C705 1/16
R739 3.3
R738 3.3
R744 10
R747 10
R746 10
R735 22K
R736 470
R737 12K
C706 0.22
C708 3.3/50
C710 3.3/50
C709 3.3/50
C707 0.22/35
CYL. FB DET
DRIVER
B+ (CYL.)
GND (M)
Q701
FMC2(C2)
22K
W+
W-
U-
V-
ROTOR POSITION DET
CYL. FG AMP
R732 33K
R730 47K
R731 330K
CYL. SERVO
CYL. FG
CAPST. FG
CAPST. FWD
R729 330K
R733 180K
R725 18K
R726 22K
C702 2.2/6.3
R727 22K
R728 18K
R734 100
CYL. FG
CYL. MOTOR
To SYS. CON PG801
5V1
GND
To TROUBLE SENSOR
MOTOR DRIVE (MOTOR DRIVE SECTION) P.C.B

MOTOR DRIVE CIRCUIT BOARD

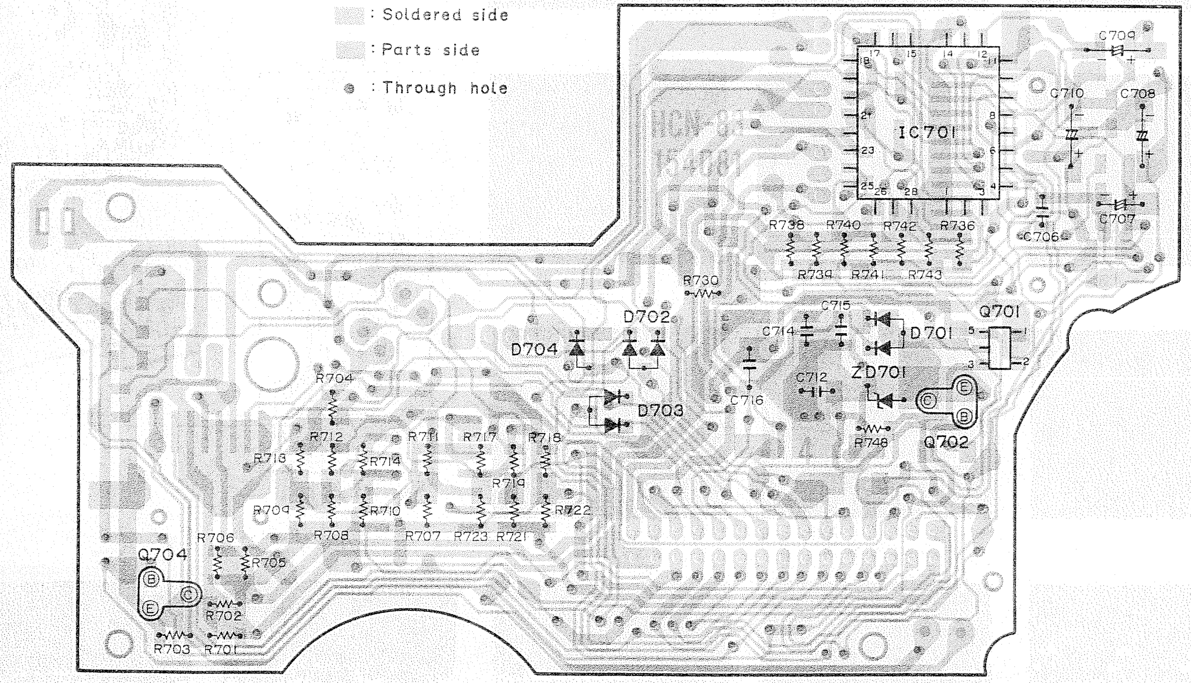

To SUPPLY END SENSOR CN07
PG702
To CYL. MOTOR CN02
PG707
PG706
To CST. HOLDE SW CN06
To LOADING MOTOR CN053
PG703
SAFETY TAB
SW749
Q749
Q703
PG708
To MECHA. STATE SW CN05
PG705
IC702
To S-VHS TAPE SW CN08
To CAPST. MOTOR CN04
PG704
CN701
To MAIN PG801
IC703
LD749

▨ : Soldered side
▨ : Parts side
● : Through hole

NOTE : MARK "■" IS DISCRETE COMPONENT.
MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

MOTOR DRIVE P.C.B
(COMPONENT SIDE)

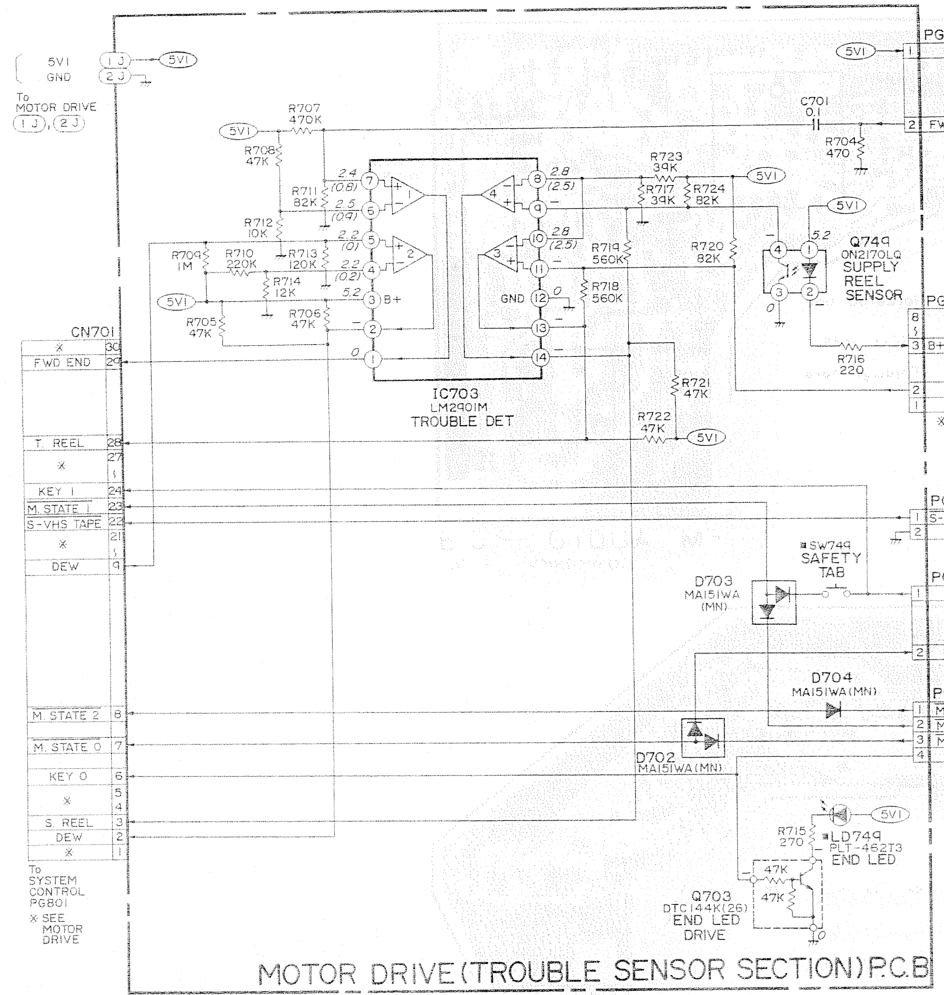
▨ : Soldered side
▨ : Parts side
● : Through hole


IC701
C709
C710
C708
C707
C706
R736
R740
R742
R739
R741
R743
R730
D702
D704
C715
C714
D701
Q701
C712
ZD701
D703
Q702
R748
R704
Q704
R702
R703
R701

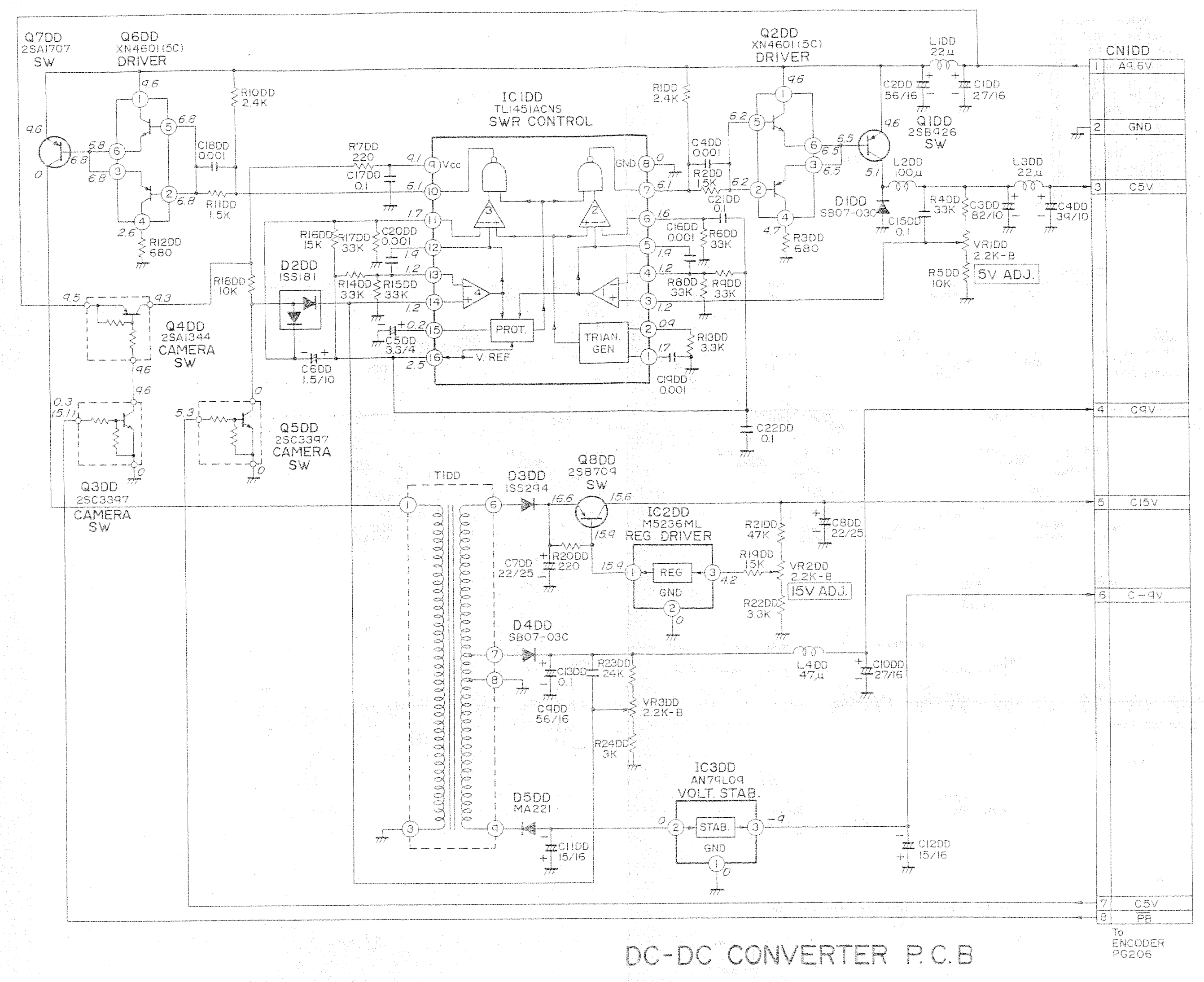
MOTOR DRIVE P. C. B
(SOLDER SIDE)

SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22	MOTOR DRIVE	5-43
AUDIO	5-31	MIC	5-48
CAPUSTAN MOTOR	5-45	PROCESS	5-11
CONTROL	5-19	PRE AMP	5-33
CHROMA	5-37	REGULATOR	5-27
DC-DC CONVERTER	5-46	SENSOR	5-7
ENCODER	5-15	SERVO	5-25
ELECTRONIC VIEWFINDER(EVF)	5-20	SYSTEM CONTROL	5-23
FM AUDIO	5-47	SWITCING REGULATOR	5-46
FOCUS SENSOR	5-21	TITLER	5-17
FUNCTION SW	5-27	TROUBLE DET	5-45
LUMINANCE	5-35		

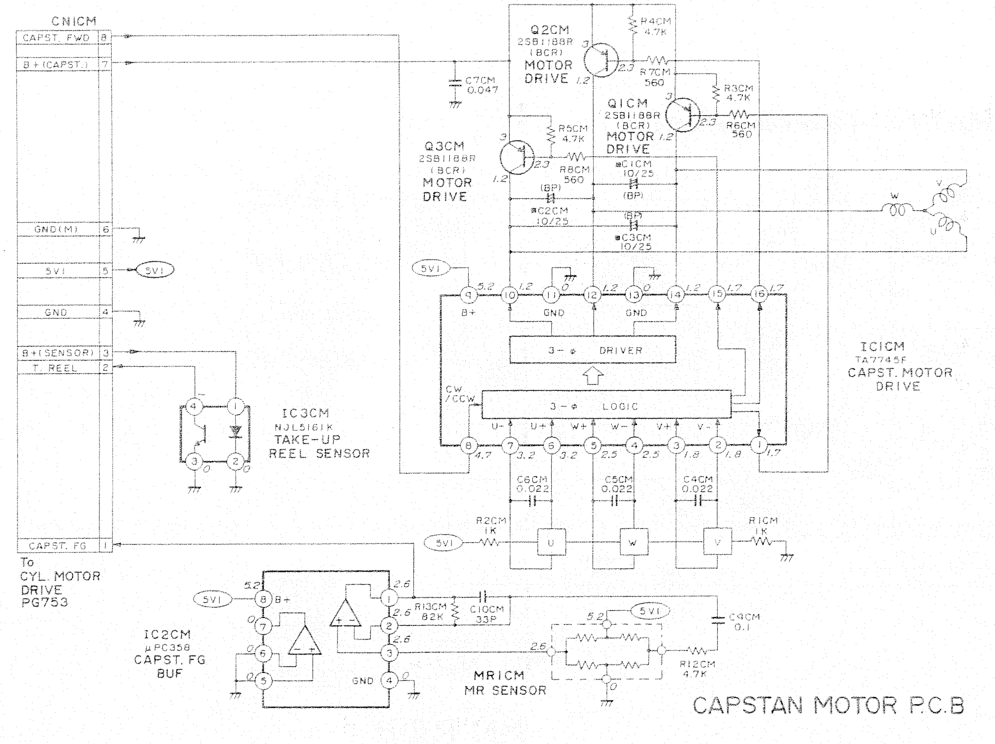
MOTOR DRIVE (TROUBLE DET SECTION) SCHEMATIC


5V1
GND
To MOTOR DRIVE (1J),(2J)
CN701
FWD END
T. REEL
KEY 1
M. STATE 1
S-VHS TAPE
DEW
M. STATE 2
M. STATE 0
KEY 0
S. REEL
To SYSTEM CONTROL PG801
※ SEE MOTOR DRIVE
IC703 LM2901M TROUBLE DET
PG707 CN07
FWD END
Q598 PH101 SUPPLY END SENSOR
Q749 ON2170LQ SUPPLY REEL SENSOR
PG704 CN1CM
B+ (SENSOR)
T. REEL
TAKE-UP REEL SENSOR
CAPST. MOTOR
PG708 CN08
S-VHS TAPE
SW302 S-VHS TAPE
※SW749 SAFETY TAB
D703 MA151WA (MN)
PG706 CN06
CST. SW
CONT.
CST. HOLDER
D704 MA151WA(MN)
PG705 CN05
M.STATE 2
M.STATE 1
M.STATE 0
CONT.
MECHA. STATE
D702 MA151WA(MN)
※LD749 PLT-462T3 END LED
Q703 DTC144K(26) END LED DRIVE
MOTOR DRIVE(TROUBLE SENSOR SECTION)P.C.B

DC-DC CONVERTER SCHEMATIC (Reference)

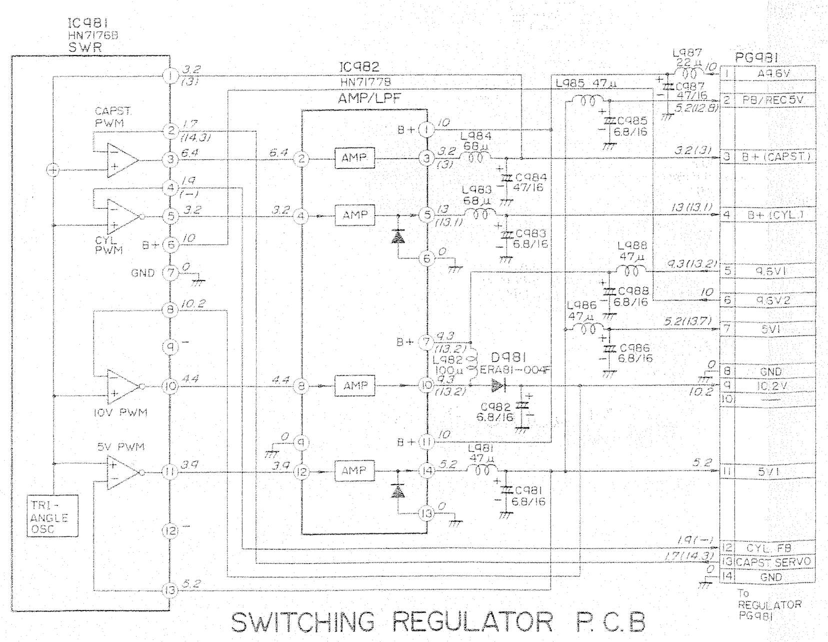

Q7DD 2SA1707 SW
Q6DD XN4601(5C) DRIVER
IC1DD TL1451ACNS SWR CONTROL
Q2DD XN4601(5C) DRIVER
Q1DD 2SB926 SW
D1DD SB07-03C
CN1DD
A9.6V
GND
C5V
C9V
C15V
C-9V
C5V
PB
To ENCODER PG206
Vcc
PROT
TRIAN. GEN
V REF
D2DD 1SS181
Q4DD 2SA1344 CAMERA SW
Q5DD 2SC3397 CAMERA SW
Q3DD 2SC3397 CAMERA SW
R5DD 10K
5V ADJ.
T1DD
D3DD 1SS294
Q8DD 2SB709 SW
IC2DD M5236ML REG DRIVER
REG
15V ADJ.
D4DD SB07-03C
D5DD MA221
IC3DD AN79L09 VOLT. STAB.
STAB.
DC-DC CONVERTER P.C.B

CAPSTAN MOTOR DRIVE SCHEMATIC (Reference)

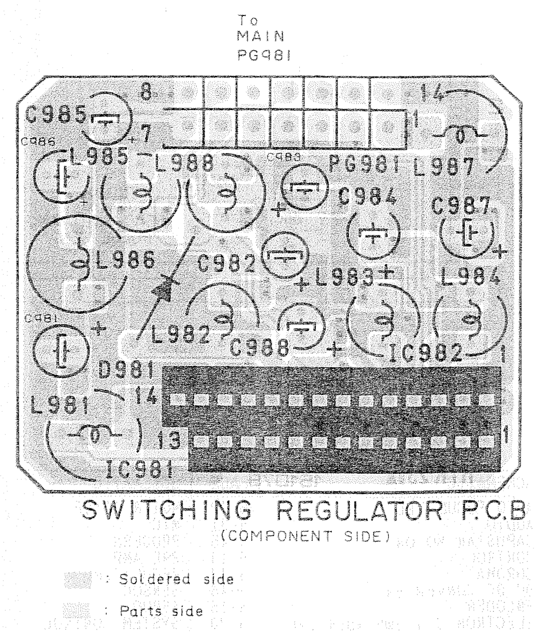

CN1CM
CAPST. FWD
B+(CAPST.)
GND(M)
5V1
GND
B+(SENSOR)
T. REEL
CAPST. FG
To CYL. MOTOR DRIVE PG753
Q2CM 2SB1188R (8CR) MOTOR DRIVE
Q1CM 2SB1188R (8CR) MOTOR DRIVE
Q3CM 2SB1188R (8CR) MOTOR DRIVE
IC1CM TA7745F CAPST. MOTOR DRIVE
3-φ DRIVER
3-φ LOGIC
IC3CM NJL5161K TAKE-UP REEL SENSOR
IC2CM μPC358 CAPST. FG BUF
MR1CM MR SENSOR
CAPSTAN MOTOR P.C.B

SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22
AUDIO	5-31
CAPUSTAN MOTOR	5-45
CONTROL	5-19
CHROMA	5-37
DC-DC CONVERTER	5-46
ENCODER	5-15
ELECTRONIC VIEWFINDER(EVF)	5-20
FM AUDIO	5-47
FOCUS SENSOR	5-21
FUNCTION SW	5-27
LUMINANCE	5-35
MOTOR DRIVE	5-43
MIC	5-48
PROCESS	5-11
PRE AMP	5-33
REGULATOR	5-27
SENSOR	5-7
SERVO	5-25
SYSTEM CONTROL	5-23
SWITCING REGULATOR	5-46
TITLER	5-17
TROUBLE DET	5-45

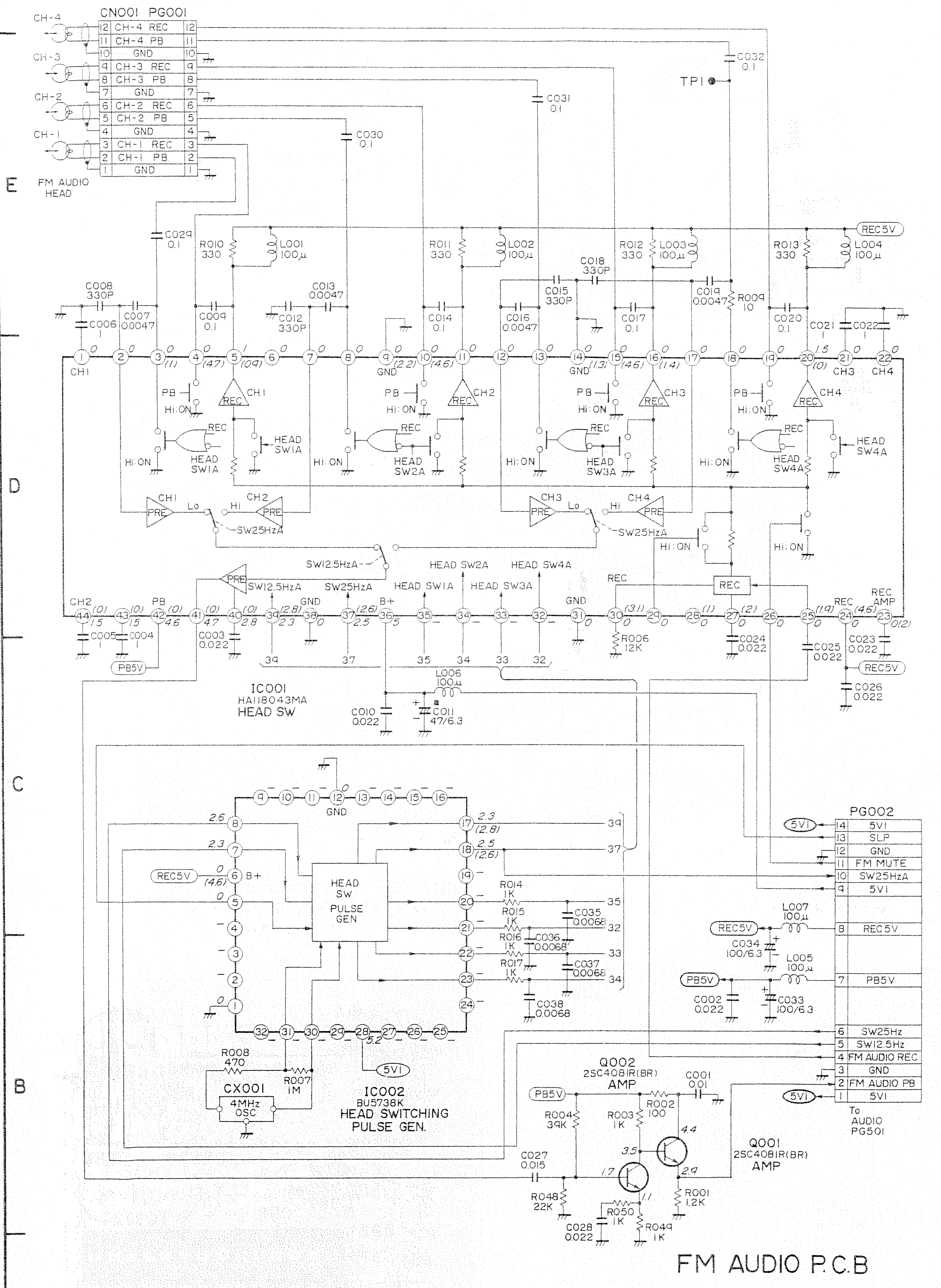
SWITCING REGURATOR SCHEMATIC


IC981 HN71768 SWR
IC982 HN71778 AMP/LPF
CAPST PWM
CYL PWM
10V PWM
5V PWM
TRI-ANGLE OSC
AMP
D981 ERA81-004
PG981
A9.6V
PB/REC5V
B+(CAPST.)
B+(CYL.)
9.5V1
9.5V2
5V1
GND
IC2V
5V1
CYL FB
CAPST SERVO
GND
To REGULATOR PG981
SWITCHING REGULATOR P.C.B

SWITCING REGURATOR CIRCUIT BOARD

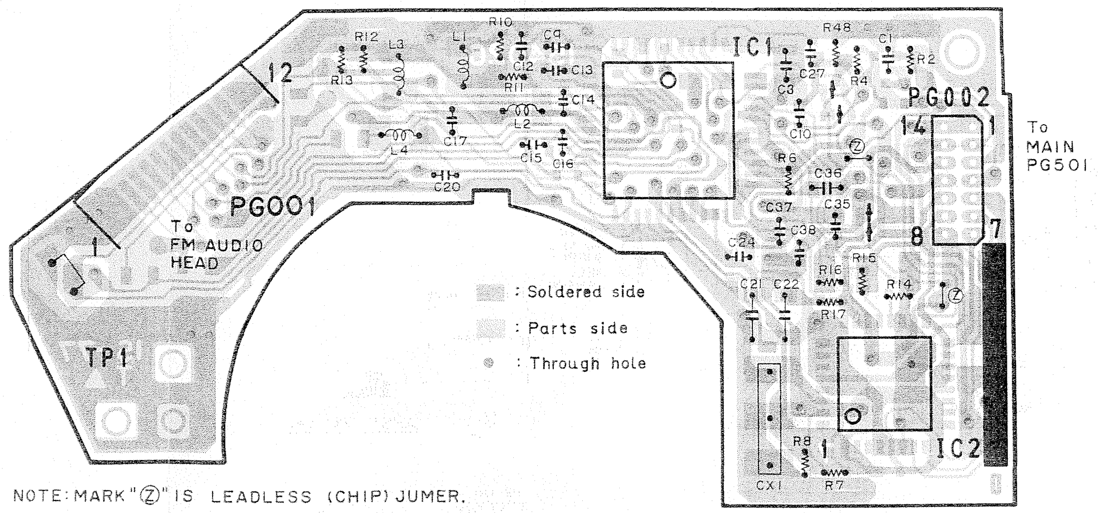

To MAIN PG981
8
14
1
7
C985
C986
L985
L988
C983
PG981
L987
C984
C987
L986
C982
L983
L984
C981
L982
C988
IC982
D981
L981
IC981
13
SWITCHING REGULATOR P.C.B
(COMPONENT SIDE)
: Soldered side
: Parts side
: Through hole

FM AUDIO SCHEMATIC


CN001 PG001
CH-4 REC
CH-4 PB
CH-3 REC
CH-3 PB
CH-2 REC
CH-2 PB
CH-1 REC
CH-1 PB
GND
FM AUDIO HEAD
TP1
REC5V
PB5V
IC001
HA118043MA
HEAD SW
IC002
BU5738K
HEAD SWITCHING
PULSE GEN.
HEAD SW PULSE GEN
CX001
4MHz OSC
Q002
2SC408IR(BR)
AMP
Q001
2SC408IR(BR)
AMP
PG002
5V1
SLP
GND
FM MUTE
SW25HzA
REC5V
PB5V
SW25Hz
SW12.5Hz
FM AUDIO REC
FM AUDIO PB
To AUDIO PG501
FM AUDIO P.C.B

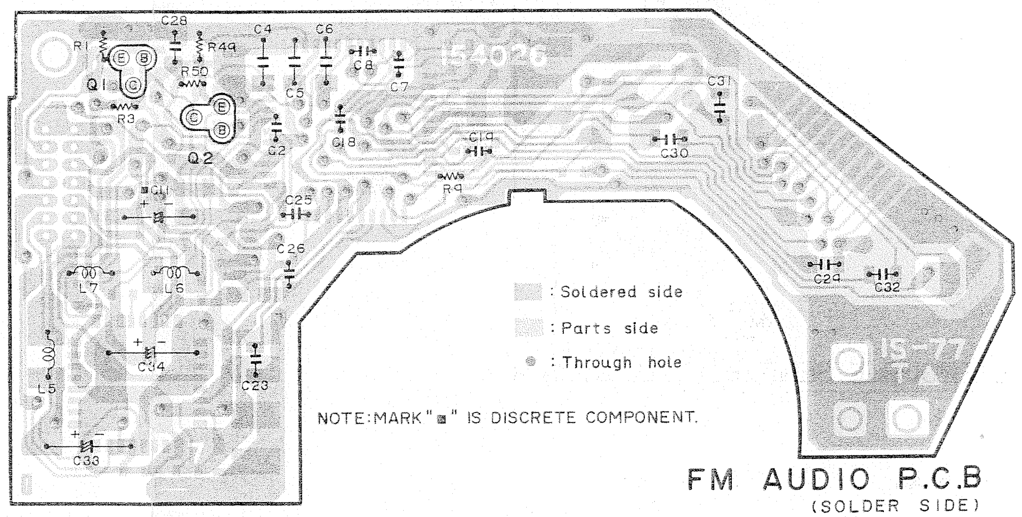
SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS·LED	5-22	MOTOR DRIVE	5-43
AUDIO	5-31	MIC	5-48
CAPUSTAN MOTOR	5-45	PROCESS	5-11
CONTROL	5-19	PRE AMP	5-33
CHROMA	5-37	REGULATOR	5-27
DC-DC CONVERTER	5-46	SENSOR	5-7
ENCODER	5-15	SERVO	5-25
ELECTRONIC VIEWFINDER(EVF)	5-20	SYSTEM CONTROL	5-23
FM AUDIO	5-47	SWITCING REGULATOR	5-46
FOCUS SENSOR	5-21	TITLER	5-17
FUNCTION SW	5-27	TROUBLE DET	5-45
LUMINANCE	5-35		

FM AUDIO CIRCUIT BOARD


IC1
IC2
PG001
To FM AUDIO HEAD
PG002
To MAIN PG501
TP1
CX1
▨ : Soldered side
▨ : Parts side
● : Through hole

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMER.

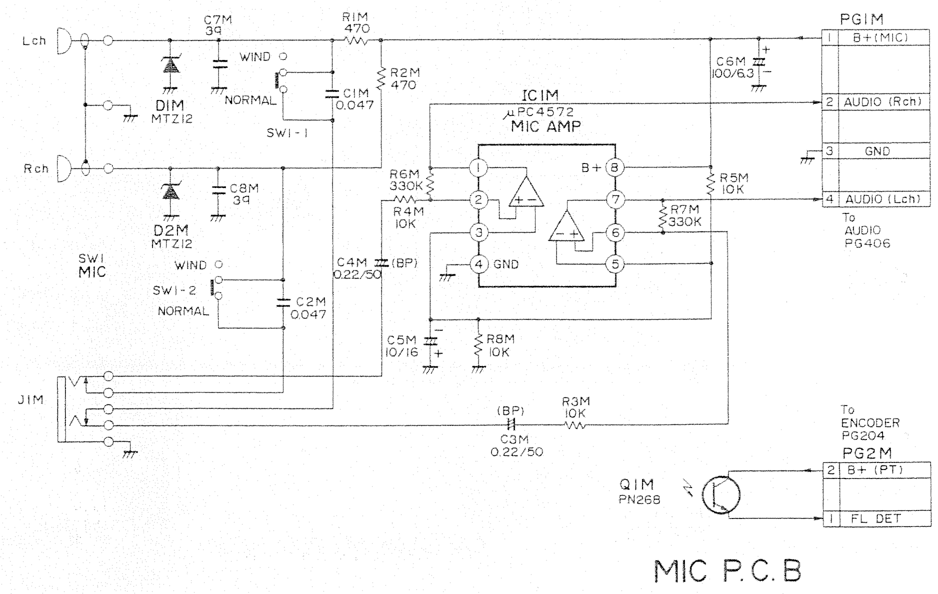
FM AUDIO P.C.B
(COMPONENT SIDE)


Q1
Q2
▨ : Soldered side
▨ : Parts side
● : Through hole

NOTE: MARK "▪" IS DISCRETE COMPONENT.

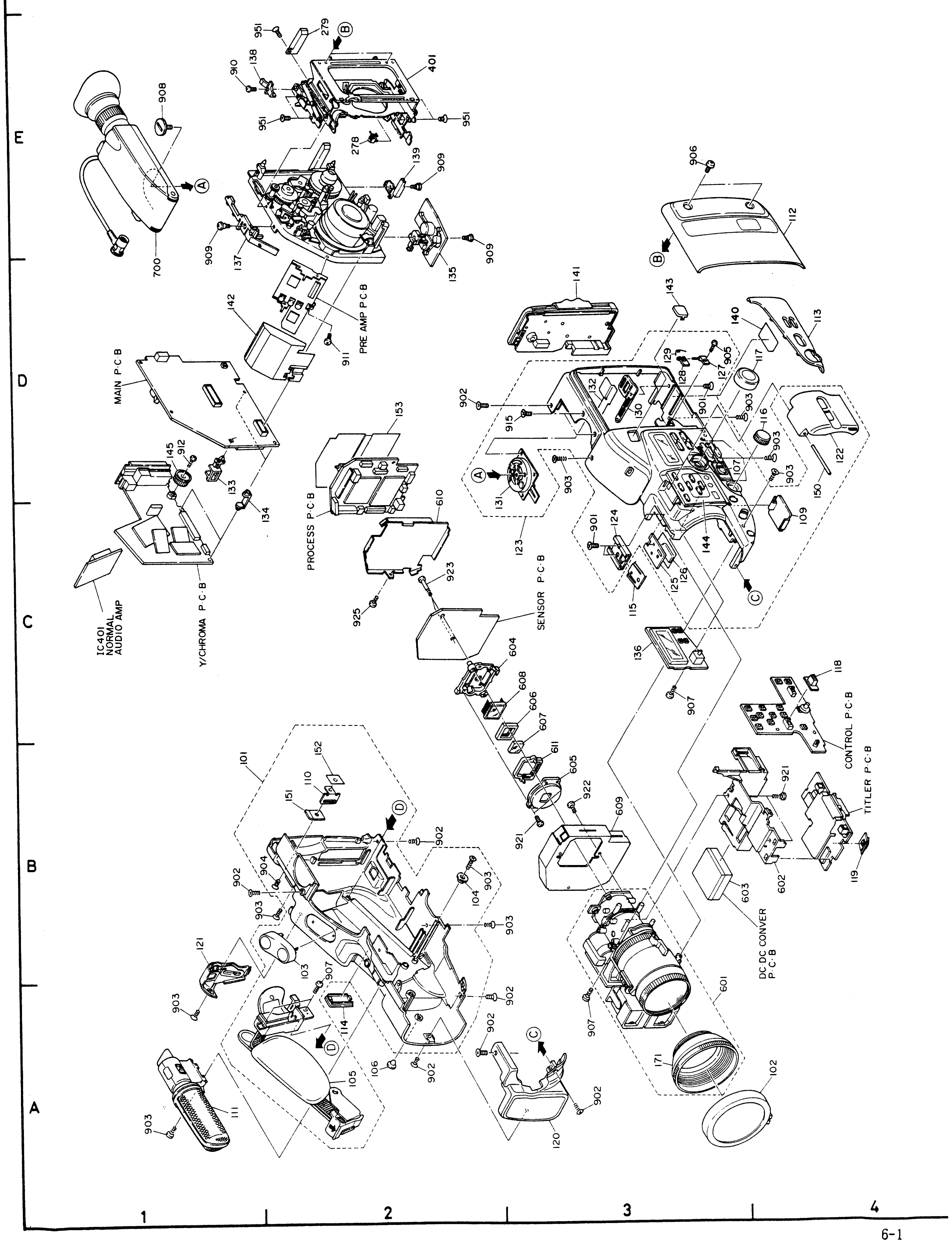
FM AUDIO P.C.B
(SOLDER SIDE)

MIC SCHEMATIC (Reference)


Lch
Rch
D1M MTZ12
D2M MTZ12
SW1 MIC
WIND
NORMAL
SW1-1
SW1-2
IC1M
μPC4572
MIC AMP
J1M
PG1M
B+(MIC)
AUDIO (Rch)
GND
AUDIO (Lch)
To AUDIO PG406
To ENCODER PG204
PG2M
B+(PT)
FL DET
Q1M PN268
MIC P.C.B

CHAPTER 6 EXPLODED VIEW

-CABINET SECTION


E
D
C
B
A
1
2
3
4
951
279
B
910
138
401
908
951
951
278
139
909
A
909
137
700
135
909
906
112
B
PRE AMP P·C·B
142
911
141
143
113
140
117
MAIN P·C·B
129
128
127
905
902
132
130
901
903
116
915
153
903
122
A
131
903
107
903
150
145
912
133
134
PROCESS P·C·B
610
123
901
124
144
109
126
125
115
C
923
925
SENSOR P·C·B
IC401
NORMAL
AUDIO AMP
Y/CHROMA P·C·B
136
604
608
606
607
611
605
907
118
CONTROL P·C·B
TITLER P·C·B
101
152
110
151
D
922
921
609
921
902
602
119
904
902
903
104
903
603
DC DC CONVER
P·C·B
903
121
103
907
903
601
114
902
907
902
C
D
106
902
171
102
105
120
902
903
111

-LUBRICATION

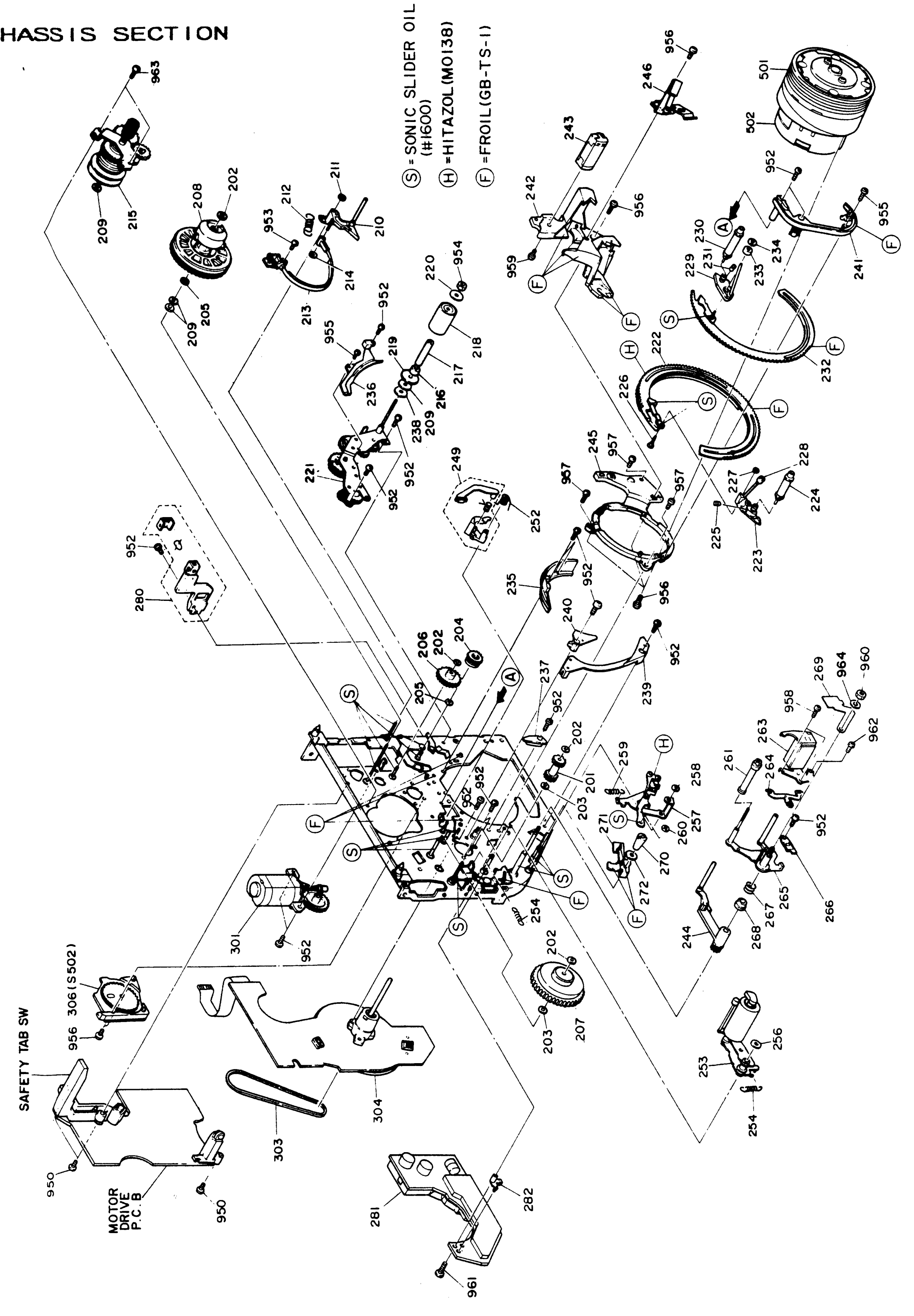
Lubrication points are shown in the exploded view diagrams by marks (Ⓢ,Ⓗ).

Lubricants shown in the diagram are as follows.

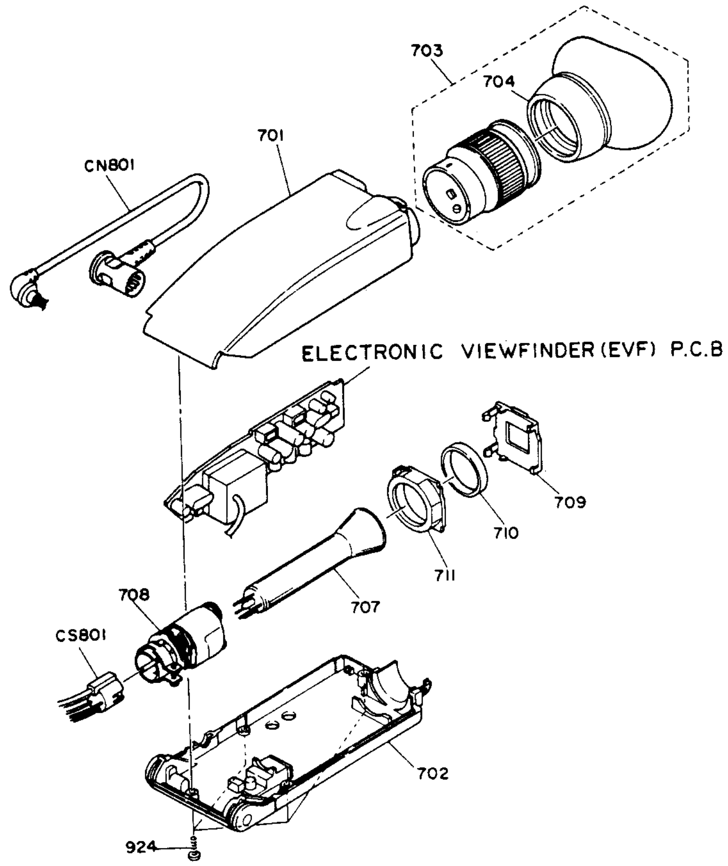
Ⓢ Sonic slider oil (#1600)

Ⓗ Hitazol (MO-138)

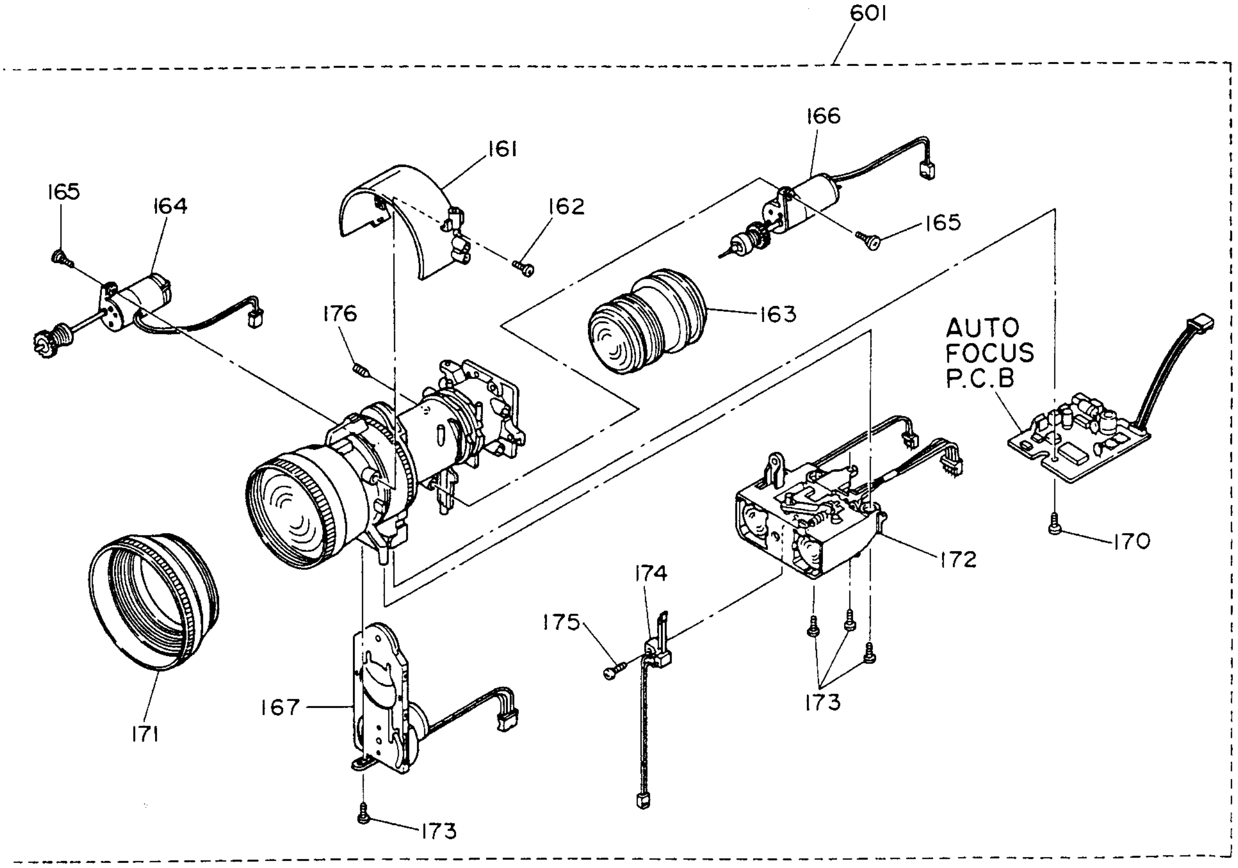
-CHASSIS SECTION


Ⓢ=SONIC SLIDER OIL (#1600)
Ⓗ=HITAZOL(MO138)
Ⓕ=FROIL(GB-TS-1)
SAFETY TAB SW
MOTOR DRIVE P.C.B
306(S502)
Ⓐ
963
215
209
208
202
205
212
211
210
953
214
213
220
954
218
217
216
219
955
952
236
238
221
249
252
280
206
204
243
246
956
242
959
501
502
230
229
231
233
234
241
222
232
226
245
957
227
228
224
225
223
235
240
239
237
201
203
259
258
271
257
260
270
272
254
301
304
303
950
207
281
282
961
253
256
244
268
267
265
266
261
264
263
269
964
960
958
962

-ELECTRONIC VIEWFINDER(EVF)


703
704
701
CN801
E
ELECTRONIC VIEWFINDER(EVF) P.C.B
709
710
711
707
708
D
CS801
702
924

-LENS SECTION SECTION


601
C
166
161
165
164
162
165
176
163
AUTO
FOCUS
P.C.B
B
170
172
174
175
173
171
167
A
173
1
2
3
4